



Technology for employability in Latin America:

*Research with at-risk youth
and people with disabilities*

Joyojeet Pal, Jay Freistadt, Michele Frix, Philip Neff



RESEARCH REPORT | 2009



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Community Technology Skills Program



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Abstract

Since the early 1990s, there has been an increasing interest and investment in information and communication technology (ICT) training centers designed to expand employability options for socially excluded groups in Latin America. This study examines programs that provide basic computer training for people with disabilities and at-risk youth. Based on primary research in five countries (Brazil, Ecuador, Guatemala, Mexico, and Venezuela), we discuss the landscape of issues around technology and employability and investigate how ICT training impacts the employability concerns of two populations with diverse needs and histories of social and economic exclusion. Our findings are broadly divided into three segments. We first examine the environmental factors that impact such projects, including the aspirational environment and the discourse of technology. We then discuss the short-term impacts of these programs, including the creation of pathways to employment, community-building, as well as impacts on self-esteem and stigmatization and the potential of mismatched employment expectations from access to these programs. We finally turn to factors that influence the success of such programs including cost, certification, and accessible technology.

140-character summary

ICT training in Latin America provides services to youth and people with disabilities that can lead to employment.

Keywords

accessibility, Brazil, community informatics, disabilities, Ecuador, employability, Guatemala, ICT, ICTD, Latin America, Mexico, social change, technology, telecenters, training, Venezuela, youth

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Preface

Microsoft launched the *Unlimited Potential Community Technology Skills Program* in 2003 with the aim of bringing the benefits of information technology to underserved populations around the world. By supporting NGOs with cash grants, software, and specialized curriculum resources, the program has reached over 170 million individuals through over 50,000 community technology centers worldwide. Evaluating impact has been key to the Community Technology Skills Program's success. In partnership with the University of Washington's Technology and Social Change Group (TASCHA), Microsoft has captured lessons learned and made continuous improvements. In recent years, a deep focus on information technology skills for employability has led to partnerships with NGOs that provide comprehensive job and life-skills training and connect individuals to employment opportunities. The TASCHA team has been tasked with assessing the impact of this strategic programmatic shift by conducting research at the national and regional level.

In Latin America, working with partners in nearly every country in the region through the Community Technology Skills program and our broader NGO-support initiatives, Microsoft has had a particular focus on the role of technology in improving the lives of people with disabilities. Providing these individuals with basic skills training coupled with access to assistive technology and connecting them with job opportunities has opened new perspectives, changed attitudes among employers, and transformed communities. Many countries in Latin America also face a "youth bulge," with young adults frustrated by a perceived lack of opportunity, that challenges

stability and progress in many communities. For this reason, Microsoft has also looked for ways to unlock the potential of low-income people in the region. Training in basic technology and life skills for these individuals enhances their positioning for future employment, helping them to discover new paths and to be seen as positive contributors to the progress of the community. To continue with its commitment to these causes and to build the capacity of NGOs, in fiscal year 2010, Microsoft donated US\$17.2 million in cash and software in the Latin American region, reaching more than 4.4 million people through its partners.

With the above program objectives in mind, Microsoft engaged a TASHA-led team to conduct research in select countries in the region on the impact of basic information technology skills training on the disabled and at-risk youth populations. The research findings are intended to inform decision makers and improve future programs. We are pleased to share this report and, perhaps more importantly, to continue to engage in dialogue and explore how cooperation, partnerships, and the leveraging of Microsoft's core competencies can help ensure that underserved populations can benefit from appropriate and accessible programs to open new opportunities for individuals and communities.

Akhtar Badshah

Senior Director, Microsoft Community Affairs

Executive summary

This report is the latest installment of the Technology & Social Change (TASCHA) Group's ongoing research on information and communication technology (ICT) training and employability in disadvantaged communities around the world. Since 2005, this work has been supported by a grant from Microsoft's Unlimited Potential Community Technology Skills Program. This particular study — *Technology for employability in Latin America* — examines some of the environmental factors, program influences, and impacts of technology centers and training programs serving people with disabilities and at-risk youth in five countries. In Brazil and Guatemala it focuses on at-risk youth. In Ecuador, Guatemala, Mexico, and Venezuela it examines centers that serve people with disabilities. The report is divided into four sections. The first two sections discuss motivations for the study, site selection, and research approach. Sections 3 and 4 present findings and recommendations.

Centers were selected based on comparability in size, programming, and populations served. Using snowball sampling and qualitative research methods — beginning with grantees from both Microsoft's *Unlimited Potential Community Technology Skills Program* and the Trust for the Americas' *Partnership in Opportunities for Employment through Technology in the Americas* (POETA) initiative — the research team conducted 130 semi-structured interviews at 26 different centers. Over 1400 pages of coded transcripts are represented in the findings presented here. Interviewees included program participants, family members, program administrators, government officials, and employers. To familiarize readers with the research context and populations, the report provides profiles

and personas of typical users and technology centers. Findings are broadly divided by the themes that emerged in the coding of the interview transcripts: environmental factors, program impacts, and program influences. Under environmental factors, the report outlines issues around the prevalent discourse of technology that underlines the ways in which the various stakeholders imagine the role of computers and technology training within the larger social and economic ecosystems. An important environmental factor is the aspirational environment because of the role it plays in people's willingness to participate in training programs. Finally, structural issues around the labor market form the third set of environmental factors that are extremely important, given that both populations have histories of geographical and institutional exclusion from formal employment opportunities. The second thematic set of findings examines the impacts of technology training centers in the lives of at-risk youth and people with disabilities. We found that community building — while not always an explicit goal of such projects — has been an important outcome, especially as a benefit to groups in those geographies that feel a shared sense of community but do not have many social or professional outlets for gathering. Creating pathways to employment is largely viewed as the most important role of technology training and we examined the mechanics of how the employability of participants is impacted by the acquisition of skills as well as through their affiliation with training centers. Respondents from both populations discussed impacts of increased self-esteem and decreased stigma in social spaces after technology training. The research also explores some of the complex impacts around

the mismatched expectations of program participants, especially given the aspirations tied to outcomes of such programs. The third set of thematic findings relate to factors that influence the adoption of community technology training centers. While factors such as cost and the quality of training are obvious and found to be relevant, we also found that a range of other factors were highly valued by participants and suggestive of greater success. These include certification, the availability of other forms of employment services (such as resume-building or interview training), and counseling services. Funding relationships are critically important to the future of these programs — especially in light of partner organizations' long-term expectations and their ability to sustain themselves financially without support. In terms

of accessibility, the report also finds that there remains a locational issue affecting the participation of people with disabilities, and that adequate and affordable assistive technologies are still lacking. The study concludes with recommendations to improve service delivery and guide investment and programming decisions, including: provide long-term funding, include representatives from target populations in program management, design programs that anticipate post-training challenges, and invest in accessibility research and awareness.

A two-page brief summarizing this research is also available. For more information on TASCHA's employability research please visit tascha.uw.edu/employability.



Chapter 1
Introduction

Chapter 1

Introduction

In studying the issues around technology use by at-risk youth and by people with disabilities, the fundamental starting point must be: Why these two categories? At-risk youth and people with disabilities represent two large groupings that are far from internally uniform. Thus the case for viewing the two must begin with a justification for using a single lens focused on both.

The answer, we argue, lies on the supply side — the technological tools. Within a larger recent discourse of technology and exclusion, there is active recognition of both at-risk youth and people with disabilities as excluded groups that can become more included through technology. Our study, therefore, is about technology, its real and perceived value.

For a little over a decade, there has been a spike of interest in technology and development, both within academia and in development practice. One of the key manifestations of this interest has been the establishment of organizations (referred to by a range of terms, including community technology centers, telecenters, and information kiosks) that offer technology training programs, access, and services to economically or socially disadvantaged populations.¹ Such centers have been created through a range of institutional and deployment arrangements — some have been operated by state, private, or nonprofit organizations, as paid, free, or partially subsidized services, always with the intention of providing these services to populations that would be excluded if access were available solely through the free market. There are several instances from the past decade of projects that have explicitly proposed technology as a means of greater social inclusion for people with disabilities (Molina, 2003) or for at-risk youth (Jacobi, 2006; Bailey, 2009), and sometimes for both (Proenza, 2001). Not surprisingly, within this larger discourse of exclusion, the understanding of disability itself has bordered on the medical model of disability, as something intrinsic to the individual that needs to be “cured,” when grouped with other disadvantaged

populations such as illiterate people (Moura de Holanda & Dall’Antonia, 2006). Likewise, in the case of at-risk youth, the category in itself often clinically attributes “risk” intrinsically to the condition of being young and living in low-income neighborhoods (Fine, 1993).

Employability was selected as a core construct for analysis since it is used by several of the agencies implementing technology programs on the ground in the countries surveyed. Employability is a useful construct for us primarily because we go beyond the idea of employment to broader concepts of increasing skill-sets, aspiration, and positioning for future employment (McQuaid & Lindsay, 2005). In this, we build upon past work on technology and employability (West & Garrido, 2008). Although the purpose of this document is best described as an impact analysis, in conducting this research and working with these two disparate yet similar groups, we also aim to explore assumptions about the ways in which service delivery is put into operation on the ground. We focus on five countries in Latin America — Brazil, Guatemala, Ecuador, Mexico, and Venezuela. We examine issues of at-risk youth in Brazil and Guatemala; and we look at issues around technology centers for people with disabilities (using primary research) in Ecuador, Mexico, Guatemala, and Venezuela.²

1.1 Technology and disability in Latin America

Since the beginning of the disability rights movement in North America and Europe in the 1970s, conceptions of disability have developed from a medical model of

1 Another manifestation is the integration of technology-skills programming into existing services offered by organizations with a history of working with marginalized populations. For consistency and simplicity, we use the term “technology centers” or “centers” throughout this document to refer to all organizations that offer technology training and may or may not additionally offer internet access.

2 As part of our research we also conducted a few interviews in Chile and El Salvador, primarily to test the consistency of our findings across regions. Those interviews are generally excluded from this report.

disability to a social model, one which seeks to combat disability oppression by identifying social exclusion and prejudice, rather than seeing individual impairment as a source of disablement (Oliver, 1996). In recent decades the social and political gains of the disability rights movement have been codified in law to varying degrees, both nationally and internationally, and the United Nations Convention on the Rights of Persons with Disabilities has set as a global standard a human rights-based model of disability (United Nations, 2006).

With the growing ubiquity of technology in the workplace and social interaction, there has been increasing interest in the role of technology for the disabled — first, in accessible design of technology itself, and second, in the use of technology to enable people with disabilities to fully participate in the socio-economic sphere. These advancements in technology have not only expanded access to services for various populations with disabilities (Wiker, Vanderheiden, Lee, & Arndt, 1991; Daniels, 1995; Betke, Gips, & Fleming, 2002; Scherer, 2005); they have also redefined terms of framing disability (Lupton & Seymour, 2000; Rapp & Ginsburg, 2001; Adam & Kreps, 2006). Interest in this area has led to much work in looking at design issues (Leporini, Andronico, & Buzzi, 2004) and policy (Galvin & Scherer, 1996). There has been research on disability and poverty (Elwan, 1999) and on disability in general in the developing world (Mitchell, Zhuo, & Watts, 1989; Wong, Peláez, Palloni, & Markides, 2006), as well as work on disability and the digital divide (Kaye, 2000; DiMaggio & Hargittai, 2001).

However, the focus on technology for the disabled in the developing world has been largely limited to the exploration of low-cost technologies to assist those with vision impairment (Basu, 2002; Ibrahim, Bhandari, Sandhu, & Balakrishnan, 2006). In general, scholarship on disability in Latin America has been more focused on the economic aspects of disability, and especially on comparative international policy issues (Alarcón & Aguilar-Gaxiola, 2000; Álvarez, 2000; Dudzik, Elwan, & Metts, 2002; Grushka & Demarco, 2003; Montes & Massiah, 2003). Especially relevant to this study is work analyzing national policies for the employment of people with disabilities, criticizing employment quota schemes such as those in Ecuador and Venezuela, as discussed in Section 1.4 (Waddington, 2000). While there has been significant work within gerontology on the impacts of disability (Couch, Goetz, & Baud, 1991; Ramos, Perracini, Rosa, & Kalache, 1993; Melzer & Parahyba, 2004;

Patel, Peek, Wong, & Markides, 2006; Reyes-Ortiz, Ostir, Peláez, & Ottenbacher, 2006), much less work has focused on social and economic rehabilitative issues.

1.2 Technology and at-risk youth in Latin America

Our choice of “at-risk youth” as an operational construct underlines critical issues of economic disenfranchisement in Latin America. With the exception of Cuba, all of the countries in Latin America and the Caribbean region have extremely high rates of income inequality. Bolivia, Brazil, Chile, Colombia, El Salvador, Guatemala, Honduras, Panama, Paraguay, and Peru each have inequality coefficients at the highest quadrant in multiple measures (CIA Gini, UNDP Gini indices), and are each surpassed only by nations in sub-Saharan Africa in terms of economic inequality. Consequently, there is already much literature on the problems of inequality for youth, especially with regard to access to schooling opportunity (Andersen, 2003), employment (Heckman, Pagés-Serra, Cox Edwards, & Guidotti, 2000), and the resulting culture of violence in low-income neighborhoods (Moser & van Bronkhorst, 1999).

The literature on opportunities for low-income and at-risk urban youth is grounded in vocational programs (Bishop, 1995). Within the realm of ICTD (information and communication technologies and development), the use of technology for education and job creation has been a key concern of project designers and intellectuals alike. Such work has focused on the creation of opportunities to retrain workers, either coming from other sectors such as agriculture (Ya’u, 2005) or coming straight out of the secondary schooling system (Castro, Carnoy, & Wolff, 2000). In the case of low-income neighborhoods in Latin America, these discussions essentially need to first deal with what is perhaps an over-arching issue of public culture — that of violence.

We recognize risk of fetishizing danger by using the term “at-risk” in our characterization of the situation for youth in Latin America. But it became obvious both in discussions on the ground with respondents in São Paulo and Guatemala City, as well as from our review of recent literature on these countries (Scheper-Hughes, 1993; Goldstein, 2003; Arias, Yamada, & Tejerina, 2004; Moser & McIlwaine, 2004; Winton, 2005), that the prevalence of violence and its importance in defining young people’s opportunities is an extremely important

point of departure in understanding social inclusion. Studies of public culture in Brazil have shown the use of “street” as a social category that represents an impersonal and masculine space of individualism and inequality, in opposition to “home,” which represents a personal, hierarchical, and feminine space (DaMatta, 1985; Gough & Franch, 2005). The subsequent view of the street as a space of violence and threat grew during the 1990s and through the turn of the century (Kant de Lima, Misse, & Mendes de Miranda, 2000; Peralva, 2000), to the point of becoming one of the primary social concerns of urban living in Brazil. This is partly attributed to the palpable difference between the rich and the poor and the lack of socioeconomic mobility (Fernandes & Valença, 2001).

Urban concerns in Guatemala are fairly comparable. Problems of urban destitution have existed in Guatemala since before the end of the armed internal conflict in 1994 (Connolly, 1990). Studies, however, have suggested worsening conditions, especially around violent crimes, after the return to peace with the signing of the peace accords in 1996 (Moser & McIlwaine, 2001). The problems of urban poverty in Guatemala and other parts of Central America differ from the Brazilian case in one important aspect: the relationship with the United States. By this we refer to not only the broader economic dependence on the United States for exports and remittances, but also the consequences of migration and deportation of youth associated with gangs (Arana, 2005).

The work on youth at the intersection of poverty and violence has looked at the issues from various aspects. One view, significantly echoed in our own work, finds that violence is seen as both normal and scandalous among young people, almost as a defense mechanism. Thus, the young come to expect violence in order to protect themselves from it. The repeated experience of violence, or even hearing about violence, is traumatizing but concurrently desensitizing (Clauss-Ehlers & Levi, 2002; Winton, 2005). Multiple sources cite a range of between 50 and 330 youth gangs with various affiliations in Guatemala City alone (PRODEN, 1996; Rodríguez & de León, 2000). It is frequently cited that the most common cause of death among 15- to 24-year-old Guatemalans in 1997 was firearms (Poitevin, Rivera, & Moscoso, 2000), as it was for parts of urban Brazil (Waiselfisz, 2008). We build on an already significant body of work that considers the link between community technology centers and violence prevention or reduction (Briggs & McBride, 2002; Ferraz, Fonseca, Pal, & Shah, 2004; Lima & Furtado, 2008;

Madon, Reinhard, Roode, & Walsham, 2009) in Latin America. Three important threads of this work include:

1. **Safe space** — the issue of spending time in unsafe places (Winton, 2005) and thus the technology center as a safe neutral space
2. **Community** — The issue of gangs as community (Hume, 2007), and the technology center as an antidote and alternate community
3. **Spatial discrimination** — the issue of spatial discrimination (Cardoso, Elias, & Pero, 2003), and the center or technology training as providing a better address for job applicants

This idea of technology as offering a solution for an apparently wide array of issues around the ways youngsters like to spend their time is fundamentally rooted in the popular idea of young people being naturally driven to, or even addicted to, technology (Gannon, 2008). Interestingly, there is a significant and growing counter-argument that certain children are excluded from technology (Facer & Furlong, 2001). Our work examines these assumptions in light of our empirical findings, from interviews with young people living at the economic margins of Guatemala City and São Paulo.

1.3 Countries covered

The sites selected for this survey were picked based on the relative uniformity of technology training projects, and on the overall population size and comparability of the countries. We selected two large countries, Brazil and Mexico, and three mid-sized countries, Venezuela, Ecuador, and Guatemala. The four countries selected for the sampling on disability are selected for consistency, as they are all served by the same initiative — POETA, the *Partnership in Opportunities for Employment through Technology in the Americas*.³ The sample has a broader urban representation due to the nature of the research in technology projects. This research does not cover the Caribbean states, nor the Guyanas.

1.3.1 Brazil

Brazil, with a population of approximately 198 million, is the largest country in Latin America, and has been prominent in the international community technology center movement (Kyle, 2001). The range of public

³ Launched in the spring of 2005, POETA is a partnership between the Trust for the Americas (a nonprofit organization affiliated with the Organization of American States) and Microsoft Community Affairs (under its *Unlimited Potential Community Technology Skills Program*) to provide technology and job-readiness training through the establishment of POETA training centers in local organizations. The program was first launched to provide training for people with disabilities and has since expanded to reach other vulnerable communities, including at-risk youth and demobilized and displaced groups. Using ICTs and adaptive technologies, POETA centers throughout Latin America and the Caribbean provide training in job-readiness skills through the use of productivity software. Some centers also provide job placement assistance and micro-enterprise planning.

Table 1.1 Economic and demographic statistics from sampled countries

	Population	GDP per capita ⁴	Unemployment	Economy (sectoral division)	Urbanization (percent urban population) ⁴
Brazil	198,739,269	\$10,100	8%	Primary 20% Secondary 14% Tertiary 66% ⁵	86%
Ecuador	14,573,101	\$7,500	8.7%	Primary 8% Secondary 24% Tertiary 68% ⁵	66%
Guatemala	13,002,206	\$5,200	3.2% ⁶	Primary 50% Secondary 15% Tertiary 35% ⁷	49%
Mexico	111,211,789	\$14,200	4.1%	Primary 15.1% Secondary 25.7% Tertiary 59% ⁴	77%
Venezuela	26,814,843	\$13,500	8.5 %	Primary 13% Secondary 23% Tertiary 64% ⁸	93%

technology access projects in Brazil gives us a broad sample to work with, as well as strong historical information to inform our analysis. With a massive economy, an urban population of approximately 85%, and a rapidly expanding services sector, employability issues in areas relating to technology in Brazil are being given serious consideration within academia and industry. Further, issues such as urban economic inequality and social access to education and opportunity have been a problem in Brazil, since the highest-quality higher education tends to be accessible primarily to students who come out of private schools, thus biasing the system against the poor. As a result, Brazil has become one of the most unequal countries of the world, with Gini coefficients consistently reaching the upper 50s, despite its ranking in the World Bank's upper-middle income economies classification. These issues of inequality have contributed to a growing concern about opportunity for the poor, especially in urban settings, who (as we find and discuss) are often excluded from institutional education.

1.3.2 Ecuador

Ecuador is among the smaller South American nations, with a population of roughly 12.5 million inhabitants. The country has shown a significant increase in human development indicators since the 1980s, with primary school enrollment increasing from 68.8% to 93.1% in 2004, and life expectancy rising over five years to 74.5

years in 2004.⁹ However, absolute poverty remains high at roughly 40%, with the rural poverty rate over twice that of urban rates. Ecuador has a high dependency on primary export — especially petroleum and bananas. Although more than two thirds of the population is in the service sector, the country has faced challenges in breaking into the high-value tertiary economy. High unemployment rates can also be linked with significant waves of migrants in the past, which have created a fairly large expatriate population. Roughly 2.5 million Ecuadorians live outside the country, and this population contributes significantly to the economy through remittances. Ecuador ratified the UN Convention and the Optional Protocols on the Rights of Persons with Disabilities in 2008. Since the election of Rafael Correa's government in 2006, there has been increased attention to issues of disability, partly because the vice president, Lenin Moreno, is himself a wheelchair user; Moreno uses the vice presidency to coordinate and promote disability initiatives through other government institutions.

1.3.3 Guatemala

Guatemala, with a population of 13 million, is the most populous country in Central America and is relatively economically representative of the region. While economic problems such as income inequality in Central America are roughly comparable to those of the rest of Latin America, Guatemala has a slightly

4 CIA World Factbook, 2008 estimate (for population and GDP).

5 CIA World Factbook, 2003 estimate.

6 CIA World Factbook, 2005 estimate.

7 CIA World Factbook, 1999 estimate.

8 CIA World Factbook, 1997 estimate.

9 World Bank Ecuador Country Brief, 2007. Available at <http://go.worldbank.org/YA49SLRFE0>.

lower rate of urbanization and a greater dependence on selected cash crops than the larger states of Latin America. In these circumstances, issues of diversifying the work force have been a particular concern of governments throughout the region. Urbanization in Guatemala is still below 50%, and a significant part of the indigenous population, especially in areas specializing in cash crop production, remains far removed from urban employability. As in Brazil and other large Latin American economies, the issues of social marginalization are very relevant in Guatemala, but — in a pattern similar to the rest of Central America — the issues of indigenous populations and of the rural-urban divide are especially important, making it comparable also to Brazil. Guatemala ratified the UN Convention and the Optional Protocols on the Rights of Persons with Disabilities in 2009.

1.3.4 Mexico

Mexico, with a population of approximately 103 million, is the second largest country in Latin America. The community technology center movement has been active in Mexico since the mid-1990s (Robinson, 1998; Huerta & Sandoval-Almazán, 2007); and, as the largest Spanish-speaking country in the world, Mexico has frequently served as the testing ground for initiatives in the rest of the region. With its large and varied economy — currently between the 10th and 12th largest economies of the world — Mexico is classified among the World Bank's upper-middle income countries, along with Brazil. The economy is diversified; roughly 70% of its work force lies in the service sector, which is highly concentrated in the federal capital district, home to about 20% of the population. The country has a fairly low unemployment rate at 3.7%, but a very high under-employment rate at roughly 25%.¹⁰ Mexico ratified the UN Convention and the Optional Protocols on the Rights of Persons with Disabilities in 2007.

1.3.5 Venezuela

Venezuela, with a population of 27 million, is the sixth-largest country in Latin America after Brazil, Mexico, Colombia, Argentina, and Peru. The oil-rich nation has the third highest nominal per capita GDP in all of Latin America behind Mexico and Chile.¹¹ The petroleum sector dominates the country's exports, representing over 80% of total exports. Venezuela is among the most urbanized countries in Latin America, with a vast majority of the population living in urban

hubs in the north and northeast of the country. Though the economy as a whole has contracted since the early 2000s, there have been a number of social investments for millions of Venezuelans — including the abolition of fees for education, healthcare, and nutrition — under the government of Hugo Chavez Frías. Venezuela has yet to ratify the UN Convention and the Optional Protocols on the Rights of Persons with Disabilities, but it does have its own laws intended to guarantee disabled people medical assistance and representation at work, as discussed below.

1.4 Policy issues: Disability in Latin America

All of the countries examined in this study have legislation defining disability and offering legal protections for citizens with disabilities. Implementation and enforcement of these policies, however, may be lacking. The *International Disability Rights Monitor*, in its comprehensive report on the Americas in 2004, characterized regional legal frameworks as “having reached a state where the creation of legal protections has outstripped the willingness and/or ability of nations to implement and enforce them” (IDRM, 2004). This holds true for public policies addressing the employment of people with disabilities, which vary widely among the countries sampled.

1.4.1 Policies addressing employment for people with disabilities

Mexico has approached the employment of people with disabilities through voluntary hiring and tax incentives, with employers benefitting from a 100% reduction of income taxes for employees with disabilities, according to Article 222 of the Ley del Impuesto Sobre la Renta (income tax law). In Guatemala, no binding legislation exists to incentivize or mandate the hiring of people with disabilities, although the right of people with disabilities to accessible employment and non-discriminatory hiring is formally recognized by the Ley de Atención a las Personas con Discapacidad, Decreto 135-96 (*Law for Attention to People with Disabilities, Decree, 135-96*).

In 2006, both Ecuador and Venezuela implemented new policies which are notable for placing positive requirements on employers to hire people with disabilities, and for implementing inspections and substantial economic sanctions for non-compliance.

10 CIA Factbook, 2008.

11 The World Bank uses the Gross National Income Atlas method (PPP). Some other estimates that fluctuate with the international oil price have ranked Venezuela as the richest economy in Latin America. See <http://www.latin-focus.com/latinfocus/countries/latam/latgdppc.htm>.

Ecuador's reformed *Código de Trabajo* (labor code) establishes a percentage quota mandating the hiring of people with disabilities by all public and private employers with more than 25 employees, starting with 1% by the end of 2007 and reaching a maximum requirement of 4% by the end of 2010. The law is enforced by the Disabilities Unit of the Ecuadorian Ministry of Labor, and employers that fail to hire the required number of employees with disabilities are fined each month until they have met the requirement, at a rate equivalent to ten minimum salaries (the monthly minimum wage, set at \$218 in 2009).

Venezuela's *Ley para las Personas con Discapacidad* (Law for People with Disabilities) establishes that 5% of jobs with all public and private employers be filled by people with disabilities. The law updates the earlier *Ley para la Integración Social de las Personas Incapacitadas* (Law for the Social Integration of Incapacitated People), which set a 2% hiring requirement for employers with more than 50 employees. With enforcement set to begin in 2009, the updated Venezuelan legislation contemplates a variable fine of 100 to 1000 tax units (*Unidades Tributarias*, one tax unit is equivalent to 55 Bolivares Fuertes in 2009) or \$2,568 to \$25,645.¹² The law does not make clear how the amount of the fine is to be decided. Both Ecuador and Venezuela require individuals to be registered with their respective national disability councils in order to qualify under the legislation. Registration also carries various other benefits, such as subsidized public transportation and reduced fees in some vocational training programs for people with disabilities. In Mexico, disability accreditation is the responsibility of the National Institute for Social Security. While Mexico, Guatemala, and Ecuador have ratified the UN Convention and Optional Protocol on the Rights of Persons with Disabilities, Venezuela has yet to do so.

1.4.2 Perceptions of employment policies for people with disabilities: Ecuador and Venezuela

Respondents' opinions on the impact of state policies are conditioned by perceptions of political will and visibility as well as by individual experience. In Ecuador and Venezuela, individuals interviewed were generally aware of the laws requiring the hiring of people with disabilities; many saw these laws as steps towards social and economic inclusion, as signs of a (possibly fleeting) opening toward people with disabilities.

"... people with disabilities should take advantage of this time because there are more job opportunities and opportunities like this free computer course and one never knows when the program *Ecuador Sin Barreras's* funding will be cut, by the next government for example, and these opportunities won't exist. ... But the truth is since the Vice President has a motor disability he has neglected people like me, someone with a visual impairment."

— Cristobal, Quito, Ecuador, computing with JAWS course instructor, person with visual impairment

In Ecuador, perceptions of positive impact were linked with the advocacy of Vice President Lenin Moreno Garcés, a champion for disability rights who is himself a person with paraplegia and a wheelchair user. The high visibility afforded by a person with a disability in national office, together with the coordination of disability initiatives through the office of the vice president, was associated with perceptions of political will in the area of disability policy.¹³

"Now with the disabled Vice President, it has helped a lot, because before, years ago, it wasn't like it is now. They didn't take us into account they didn't help us. We didn't have job opportunities, not in every company like now with the Vice President's help. They respect us and everything, not like before."

— Israel, 23, Quito, Ecuador, person with motor impairment

The combination of updated legislation and awareness campaigns also contributed to positive perceptions of policy in Venezuela. Public visibility of people with disabilities in the streets and on public transportation

¹² All dollar figures are U.S. dollars.

¹³ An example is *Ecuador Sin Barreras* (Ecuador Without Barriers), aimed at promoting accessibility in education, transportation, and the labor market.

was noted by respondents as signs of increasing social inclusion. The government has carried out awareness campaigns and initiatives such as the *Misión San Gregorio Hernandez*, which was intended to distribute basic technical aids and to carry out a census of people with disabilities in Venezuela's poorest neighborhoods. Closed captioning and sign-language interpretation of television news, on both state and privately owned channels, is mandated by law.

"The Law for People with Disability is an advance. Before it was very segregated, very discriminatory towards people with disability. ... the problem is that it be followed. ... Yes, there have been advancements, but there needs to be more work. ... You see many more people with disabilities, in jobs, in the street. People who have come out of their houses, most likely. ... People see that there is a change, they are looked upon a bit better, and you have to take advantage of that."

— Gregorio, 27, Caracas, Venezuela,
person with motor impairment

However, the prevailing atmosphere of political polarization in the country was also reflected in individual responses, such as one respondent's prefacing a positive comment with the following statement: "I have to say something, even though many don't like to hear it, the law that the president approved is really good... Other presidents before haven't taken the trouble. I have to be sincere, right?"

In both Ecuador and Venezuela, however, these positive perceptions of policy are tempered by frustration with a perceived lack of compliance with the laws, criticism of government institutions as inefficient or ineffective, and feelings that certain experiences of disability have received unequal attention in government policies. With the relatively recent implementation of policies mandating the employment of people with disabilities in Latin America, further comparative policy analysis is needed to assess their overall impacts. Perhaps the most over-arching concern regarding disability policy in the countries surveyed is a lack of effectively enforced anti-discrimination laws and requirements for employers to provide reasonable accommodation for employees with disabilities. In addition, the underlying assumptions about disability, as well as the efficacy of both voluntary and enforced

employment quotas (such as those discussed above), have been criticized by scholars analyzing such policies in the European context (Waddington, 2000)

"... recently there was the Misión San Gregorio Hernandez that President Chavez did, which more than anything was for the [poor] neighborhoods. In my neighborhood they did a census of all the people with disabilities in the sector, they called them and in many cases they gave them some kind of help: cushions, clinical beds, a chair for bathing, cushions like this one, but that's the only kind of help that I have gotten. ... I know that they give employment and stuff, but it's pretty difficult, it's complicated. I don't know if it's the demand or the slowness of the process, but I have many friends who are still waiting to be called, and I haven't gone to the trouble to go to an institution, just to lose time."

— Edison, 26, Caracas, Venezuela,
person with motor impairment

1.5 Policy issues: At-risk youth

Issues around policies for youth are particularly complicated by growing income inequality throughout much of Latin America. Policies focused on higher education tend to inordinately benefit youth from relatively well-off families, whose superior primary schooling allow for greater access to higher education and improved possibilities thereafter. The shortage of opportunity in low-income neighborhoods is particularly evident in the high prevalence of unemployment and criminality among the young in these countries, as seen in Table 1.2.

We see in the statistics below an intersection of three factors: first, a comparatively high youth unemployment rate; second, a comparatively low participation rate in higher education among young people; and third, a relatively high effect of crime on youth.

Indeed, as the statistics show, it is not unreasonable to claim that the "danger of being young" is significantly higher in Latin America than elsewhere. What is perhaps of more concern is the policy stance on youth. Unlike with disability, there is much less public interest or even lip service promoting proactive policy to serve youth. On the contrary, most policy in

Table 1.2 Selected unemployment and crime statistics

Country	Literacy rate for adults 15+ (2007) ¹⁴	Youth un-employment rates (2005) ¹⁵	Rate of participation of youths with higher education (2005) ¹⁶	Gross enrollment in tertiary education ¹⁷	Youth (0-24) as percent of population ¹⁸	Homicides as percentage of total deaths ¹⁹	Homicide deaths for youth aged 15-24 compared to total homicides ²⁰
Brazil	90%	19% (8%)	10.1%	29.9%	46%	5%	38%
Ecuador	84%	13% (8.7%)	12.9%	35.3%	51%	4%	28%
Guatemala	73%	6% (3.2%)	3.4%	17.7%	63%	5%	40%
Mexico	93%	7% (4.1%)	14.6%	26.9%	48%	2%	22%
Venezuela	95%	20% (8.5%)	17.7%	52%	50%	6%	40%
USA	93%	11.3% (4.0%) ²¹	N/A	81.7%	23%	1%	29%

Latin America seems to be more punitively inclined, part of a larger stigmatization and criminalization of young people. Thus, both in the sample of our interviews as well as in the popular literature, there is a judgmental discourse about young people in low-income neighborhoods. Such stigmas play into heavy-handed police tactics towards youth in these areas, as well as inhibiting their access to jobs.

An example of the heavy-handed approach to youth policy is the *Mano Dura* approach, which has found much political support in Central America. This approach is critical to our investigation into the dynamics of the labor market towards youth and their engagement with or perceptions of technology centers. In Honduras, Guatemala, and El Salvador, governments have enacted aggressive, anti-gang laws in support of “a new set of ‘hyperpunitive’ criminal justice practices known as *Mano Dura*, including the expanded use of capital and corporal punishment (sometimes administered in public view), the imposition of stricter sentencing guidelines, and a general rejection of rehabilitative programs” (Godoy, 2006). Although such an officially-sanctioned use of force does not exist in Brazil, there is a comparable popular support for heavy-handed techniques in policing youngsters (Dammert & Malone, 2006). Due to this public stigma, combined with the precarious situation of the public schools, policies that engage youth in

work are vital. Within this overall environment, the positioning of community technology centers as rehabilitational, vocational, and social spaces provides an important focal point for policy discussion.

In terms of employment, there is much discussion on the role of formal policy in integrating young people into the labor force with the kinds of jobs they see as promising for the future (Fawcett, 2001; Jaramillo & Parodi, 2003; Rosas & Rossignotti, 2005). In Brazil, youth are prohibited from working formally before they are 16 years old, which forces many into informal employment. In the hope of providing an alternative for families who need additional income and for youth who need formal work experience during secondary schooling, an apprenticeship program, *Jovem Aprendiz*, is now offered. Following the collapse of the stimulus program aimed at providing youth with their first formal jobs (*Plano Nacional de Estímulo ao Primeiro Emprego*), *Jovem Aprendiz* was started in 2000.²² It offers internship opportunities for youth between 14 and 24 years old who have matriculated and are attending school (if they haven’t finished primary education).²³ Those who haven’t completed schooling may work up to six hours per day, and those who have can work a normal eight-hour day (divided up equally between the training program and the company) and receive a minimum salary. This is legally mandated in Brazil: mid- to large-sized companies must

14 Literacy rates: World Bank, 2007. Available from World Bank Development Data & Statistics, <http://go.worldbank.org/4C55Z0H7Z0>.

15 International Labour Organization, 2008.

16 International Labour Organization, 2008.

17 Gross enrollment in tertiary education: World Bank, 2007, except Venezuela, 2006. Available from World Bank EdStats, <http://go.worldbank.org/ITABCOGIV1>.

18 Youth (0-24) as percentage of population calculated from data available from World Bank Development Data & Statistics, <http://go.worldbank.org/4C55Z0H7Z0>.

19 World Health Organization, 2004.

20 World Health Organization, 2004.

21 United Nations, *World Youth Report*, 2007. Available at <http://www.un.org/esa/socdev/unyin/wyr07.htm>.

22 IPEA, http://desafios.ipea.gov.br/003/00301009.jsp?ttCD_CHAVE=2422. The reasons for the failure of this program merit a detailed discussion not possible here.

23 <http://www.espro.org.br/home/?page=conteudo/lei-da-aprendizagem>.

24 Brazilian Ministry of Labor, <http://www.mte.gov.br/Noticias/Conteudo/10351.asp>.

25 <http://www.diariodesuzano.com.br/main4/conteudo.php?cod=11299> & http://www.ciesp.org.br/hotsite_dejur/pdf/conselheiro_08/Pag_6.pdf.

26 http://www.planalto.gov.br/ccivil_03/LEIS/L10097.htm.

27 <http://www.mintrabajo.gob.gt/org/funciones/inspeccion/servicios/permiso-de-trabajo-a-menores>.

employ as apprentices between 5 and 15% of their workforce,²⁴ otherwise they are fined R\$402 (around \$200) for each apprentice position unfilled.²⁵ The apprenticeship ends after two years, when the contract expires or the company hires the apprentice.²⁶

In Guatemala, the Labor Ministry stipulates that youth at 14 years of age may work up to six hours per day, to a maximum of 36 hours per week with permission from their parents and regular school attendance, in addition to copies of documents confirming identity and age.²⁷ Nevertheless, in Guatemala (unlike Brazil), these policies are not paired with programs to stimulate or mandate employers to hire youth. Several countries in Latin America also specify policies regarding what kinds of work, and what times of the day young people can work; however, it is widely observed that these labor laws are ineffective in keeping children in school or preventing full-time work by minors (U.S. Department of Labor, 2005).

The issue, we find, is much larger. While many programs in both Brazil and Guatemala have focused on prohibiting work by young people, few reasonable options are available in terms of quality educational training that would lead to participation in the formal work sector. As a consequence, young people are pushed toward the informal sector or illicit activity for economic opportunities. This in turn leads back to the circle of criminalization and punitive action by the state. Given this intersection of factors, the role of technology training — as a means of offering young people out of school an alternative activity and eventual participation in the formal job sector — becomes an important area for careful investigation.

1.6 TASCHA's employability research & Microsoft's *Unlimited Potential Community Technology Skills Program*

This report is the latest installment in ongoing research investigating the links between employability and information and communication technologies. This body of work, funded by Microsoft Community Affairs under its *Unlimited Potential Community Technology Skills Program*, began in 2005 and has explored diverse communities of users — including displaced workers, immigrant women, youth, and people with disabilities — in Europe, Asia, Latin America, and North America.

Microsoft has provided research support to the University of Washington's Technology & Social Change Group (TASCHA) to understand the role of non-profit organizations in providing basic ICT-skills training to underserved populations around the world, as well as to inform programmatic decisions.

Over time the emphases of this research have evolved. As the body of knowledge developed, questions of program evaluation and impact gave way to a broader investigation of the relationship between ICT skills and employability. The inquiry now extends beyond Microsoft grantees and has expanded to include a variety of local research partners and, in many cases, a commitment to participatory design that has widened the research scope even further. However the *Unlimited Potential Community Technology Skills Program's* large portfolio of grantees — and the University of Washington's ongoing relationship with these organizations — provides a rich starting point for sampling and research design.

To learn more about TASCHA's employability research, please visit tascha.uw.edu/employability.



Chapter 2

Research approach

Chapter 2

Research approach

One of the more difficult aspects of this research was coming up with a framework that effectively captures the needs of the two disparate populations that our research investigates.

Our justification for approaching this as a single report is rooted in the supply side: both populations, at-risk youth and people with disabilities — despite representing entirely different populations with needs that are barely comparable — are seen as appropriate targets for corporate social responsibility programs. In fact, at-risk youth and people with disabilities are nuanced “categories” which themselves are not homogenous — neither in their physical, economic, and social characteristics, nor in their regional context. In other words, we need a different lens to understand the factors around social and economic exclusion affecting a person with visual impairment in Guatemala than we might use for the factors surrounding exclusion for someone with a motor disability in Venezuela.

To this end, our approach here is to examine the assumptions around exclusions, using a qualitative frame to create a narrative that encompasses the perspectives of the populations for whom technology centers are designed, as training or communications access points. Thus we compare the meaning and quality of access for all of the groups using the technology centers, and document how the technology intervention impacts employability as well as a number of other factors around social and economic change for these populations.

2.1 Sample: Technology for people with disabilities

In our research we spoke with organizations that are affiliated with the POETA initiative in Latin America, which specializes in technology training programs for people with disabilities. In each country, that organization served as a startingpoint to meet with respondents. We also interviewed POETA officials and administrators.

2.1.1 Mexico

In Mexico we conducted research in conjunction with four POETA-affiliated organizations offering technology training and access services to people with disabilities: two in the capital region, one in Campeche, and one in Tlalnepantla. These locations primarily served people with motor and auditory disabilities, providing subsidized training programs and some access to adaptive hardware. We also conducted a five-day participant observation at an intensive wheelchair mobility training camp run by an advocacy group for disabled people that is unaffiliated with POETA, *Vida Independiente México*.

2.1.2 Venezuela

In Venezuela we conducted research in conjunction with two organizations, both located in Caracas. One was a physical rehabilitation center that worked

Table 2.1 Technology training programs in Mexico

Institution, affiliation, location (type)	Training content	Cost	Employment services	Population served	Other services, notes
<i>Universidad La Salle, Álvaro Obregón, Mexico D.F. (private university)^P</i>	JAWS, Word 2003, Excel, internet Explorer	Free	None	People with visual impairments The blind	Course graduates employed in similar training course, Red Social Course instructor person with disability Licensed JAWS versions
<i>Universidad Pedagógica Nacional 041, Campeche, Mexico (public university)^P</i>	Windows XP, MS Office	Free	Job training Occupational therapy	People with motor and auditory disabilities People with scarce resources Family members of above	Stopped functioning after fourth generation due to lack of funding Provided transportation through government agency during first generation
<i>CECATI 11, Atzacotalco, Mexico City (public vocational training center)^P</i>	Windows XP, MS Office	Nominal fee (65 pesos, \$5)	Job training Occupational therapy Forms relationships with employers Job announcements	People with motor, visual, and other disabilities People with few resources The elderly Family members of above	Vocational training courses Administration reports lack of success in attempts to form relations with employers
<i>CECATI 65, Tlalnepantla, Mexico (public vocational training center)^P</i>	Windows XP, MS Office, Databases	Nominal fee (65 pesos, \$5)	Job training Occupational therapy	People with motor, visual, and other disabilities People with few resources The elderly Family members of above	Vocational training courses Administration reports lack of success in attempts to form relations with employers
<i>Vida Independiente México, Mexico City (disabled people's activism and advocacy organization)</i>	None	Intensive trainings 1000–3000 pesos (\$75–\$230)	Job placement through exclusive agreements with employers, in partnership with psychological and vocational support NGO <i>Fundación Humanista de Ayuda a Discapacitados</i> (Humanist Support Foundation for Disabled People, FHADI, in Mexico City)	People with motor impairments Wheelchair users	Intensive wheelchair mobility training camps Extreme sports Advocacy and activism

^P Organization affiliated with POETA (used in all Chapter 2 tables)

primarily with people with motor disabilities. The other, a vocational training center serving low-income populations, had given one training course for people with hearing impairments and learning difficulties.

2.1.3 Ecuador

We conducted research in Ecuador with two organizations, both located in Quito, the capital city. SECAP, a government-funded public vocational training center, holds a computer training course for people with visual impairments and offers other courses free of charge to people with a government-accredited disability. The Ecuadorean research was of particular importance to this work from a policy standpoint on issues of disability.

2.1.4 Guatemala

In Guatemala we conducted research in conjunction with two organizations, one located in Mixco on the periphery of Guatemala City, and another within Guatemala City itself. One of the centers specialized in services for people with visual impairments; the other offers more broadly subsidized courses for people with disabilities, catering primarily to people with motor disabilities.

2.2 Sample: Technology for at-risk youth

Our research sample for at-risk youth focused primarily on Brazil and Guatemala. Unlike our organizational sampling for people with disabilities, in the case of at-risk youth, we sampled more organizations but fewer “graduates” from the organization, because there were more service providers as well as greater variance in the kinds of services offered and the approaches toward training and, in some cases, toward rehabilitation.

2.2.1 Brazil

In Brazil we conducted research in conjunction with several organizations in São Paulo and Brumadinho. Among these are some large community technology organizations and a number of small operations situated within communities, offering training and other services.

2.2.2 Guatemala

In Guatemala we conducted research in conjunction with several organizations throughout the country. Some of the locations that were more rural had high youth unemployment, but relatively lower numbers of at-risk youth in terms of exposure to violence.

Table 2.2 Technology training programs in Venezuela

Institution, affiliation, location (type)	Training content	Cost	Employment services	Population served	Other services, notes
<i>Fundación Pro-Cura de Parálisis, Chuao, Caracas (NGO rehabilitation center)^f</i>	Windows XP, MS Office, Databases	Nominal fee (40 BsF, \$8 per level)	Job training Occupational therapy Entrepreneurship courses Links with other employment programs	People with motor impairments and their family members	Donation and repair of wheel chairs Physical therapy Choir Course instructor person with disability
<i>ORT de Venezuela, Caracas (part of ORT Latin America)^f</i>	Windows XP, MS Office, Databases	Nominal fee (40 BsF, \$8 per level)	Job training	Population with few resources Deaf people People with learning difficulties	Computer maintenance and repair courses Partnership with Instituto Radiofónica Fe y Alegría (religious charity providing education and other services for people with disabilities) for training of deaf students and students with learning difficulties

Table 2.3 Technology training programs in Ecuador

Institution, affiliation, location (type)	Training content	Cost	Employment services	Population served	Other services, notes
<i>Programa Muchacho Trabajador</i> , Quito (NGO) ^P	Windows XP, MS Office, Databases	Free	Job announcements Document digitization course	People with motor and auditory impairments	Weekly courses, divided between computer training and citizenship workshops (rights discourse, legal rights) Computer lab open weekdays for course participants Ecuadorean sign language Course teacher and other staff use sign language Host free document digitization course run by outside company Weekday courses for youth with auditory disabilities
SECAP, Quito (public vocational training center)	JAWS, Windows XP, MS Office, Databases	Free for people with disabilities	Job-specific training available: call center	People with visual impairments Courses open to the general public for a fee	Individuals referred to SECAP by disability NGOs, job-placement services, and government agencies Computing with JAWS Course instructor person with disability

Table 2.4 Technology training programs in Guatemala

Institution, affiliation, location (type)	Training content	Cost	Employment services	Population served	Other services, notes
<i>Fundabiem/Teleton, Mixco</i> (private NGO and rehabilitation center) ^P	Windows XP, MS Office, Databases	Free or token amount based on socio-economic abilities	Job announcements Institutional champion Networks with potential employers, i.e. McDonald's Hires former students to teach courses	People with motor disabilities	Physical rehabilitation and speech therapy Prescriptions Social work services
<i>Comité Pro-Ciegos/CENTIC</i> , Guatemala City (private rehabilitation center) ^P	Windows XP, MS Office, Databases	Free for the visually and auditorily impaired	Institutional champion Forms relationships with potential employers Resume bank Facilitates interview process Follows up with graduates and employers after hiring Develops assistive technology to meet employers' technology needs	People with visual or auditory impairments	Braille, abacus, mobility training with walking cane Social communication activities Translation from text to Braille Primary schooling Community activities and sporting and cultural events

Table 2.5 Technology training programs in Brazil

Institution, affiliation, location (type)	Training content	Cost	Employment services	Population served	Other services, notes
<i>CVT Brumadinho</i> , Brumadinho, Minas Gerais (municipal government body, formerly an NGO)	Hardware, Windows XP, MS Office, Professional courses	Free to poor youths, at-cost to others	Resume bank for community Behavioral course Job announcements Hires former students at center	Neighborhood youth (not necessarily at-risk).	Had received support from the <i>Associação Telecentro de Informação e Negócios (ATN)</i> in form of donated equipment Also teach vocational courses, such as auto mechanics and electrical maintenance
<i>Oxigênio</i> , Guarulhos, São Paulo (NGO, affiliated with government)	Hardware, Windows XP, MS Office, professional courses	Free	Relationships with employers (local businesses use the center to conduct interviews) Hires former students to teach courses	Youth and adult community members in poor neighborhoods	Offers courses on refurbished computers donated to NGOs throughout the country Also offers cultural classes
<i>Associação Telecentro de Informação e Negócios (ATN)</i> , São Paulo and Brasília (large NGO with ties to government ministries)	No direct training; some distance course management	Free	N/A (supports centers)	Primarily serves 1250 community technology center operators 50 centers receive Microsoft licenses through ATN	ATN is an organization that serves community technology centers — they create toolkits to help centers become more financially sustainable by generating revenue
<i>Casa do Zezinho</i> , Capão Redondo, São Paulo (NGO with ties to French Bank, Soci��t�� General)P	JWindows XP, MS Office, Adobe Illustrator	Free	Job placement Relationships with employers Behavioral training courses Hires former students at center	Neighborhood youth (most at-risk)	Computers and other services, including English language classes, art workshops, music, sound recording, film, etc. Much of the financial support comes from international companies

Table 2.5 Technology training programs in Brazil (continued)

Institution, affiliation, location (type)	Training content	Cost	Employment services	Population served	Other services, notes
<i>Associação Águias</i> , Americanópolis, São Paulo (local religious organization)	No computer courses	Free	None	Young church constituents Community members	Use of music to attract children away from drugs and criminality Received <i>Oxigênio</i> reconditioned computers, though not used yet
<i>Associação Evangélica Beneficente</i> , Imigrantes, São Paulo (church NGO)	Networking	Free	Job placement Relationships with employers Entrepreneurship courses	Neighborhood youth (most at-risk) Community members	Space in a location formerly occupied by a youth detention center Also teach hairstyling, security, photography
<i>Projeto Conte Comigo</i> , Americanópolis, São Paulo (local religious organization)	Windows XP, MS Office, telemarketing	Free	Church serves as networking site, institutional champion	Young church constituents Community members	Use of music to attract children away from drugs and criminality Aim to increase qualifications for youth to get jobs Teach English, Spanish
<i>IDORT</i> , São Paulo (private company that administers metropolitan technology centers)	Hardware, Windows XP, MS Office, Databases, Professional courses	Free (state subsidy)	N/A (provides curricula; organization does not serve as bridge to employment)	Neighborhood youth (not necessarily at-risk) Community members	Primarily develop curricula in computer training, job insertion, digital art, environmental education, computer maintenance Currently have 1.3 million citizen users and 470,000 instances of people accessing center computers monthly
<i>Projeto Quixote</i> , São Paulo (university / private partner)	Windows XP, MS Office, digital editing	Free	Institutional champion Job placement Follow up with employers after hiring	At-risk youth	Primarily offering programs in art and spray painting Small program, focusing on helping few students rather than large numbers Provide scholarships for youths to have access to private schools

Table 2.6 Technology training programs in Guatemala

Institution, affiliation, location (type)	Training content	Cost	Employment services	Population served	Other services, notes
<i>Codino</i> , Totonicapán (community center)	Windows XP, MS Office	25 Quetzales (\$3)/month	Training for job-searching skills and resume making	Community youth, predominantly indigenous	Community meeting space Copies, faxes, school supplies, etc. About 25 students every three months
<i>Movimiento de Trabajadores Campesinos</i> , San Marcos region (landless peasant workers movement)	Windows XP, MS Office	Free	Internship programs in carpentry	Community youth, predominantly indigenous, rural areas	Legal and community organizing support, religious services, human rights accompaniment About 20 computer class students at time of study Thousands of community members are part of movement in general
<i>Escuelas Abiertas</i> , Guatemala City (government-funded program implemented in public schools)	Windows XP, MS Office	Free	No direct programs offered	Community youth At-risk adults	Additional workshops such as sports, art, chess, break-dancing, skateboarding, English courses, food for community 55 participating schools around the country
<i>Co-Ed</i> , throughout entire country (Microsoft program implemented into public cooperative schools)	Windows XP, MS Office	125 Quetzales (\$15)/year	Entrepreneurship course, present small business project to community with hope of self-employment	Neighborhood youth (most at-risk)	39 computer centers, serving 194 schools in textbook loan program, literacy campaigns, school libraries, orientation for transition from secondary school to higher education, teacher training program
<i>Enlaces Quiche</i> , Quiche region (NGO and indigenous persons movement)	Windows XP, MS Office	Nominal cost, available for free online	Entrepreneurship courses	Neighborhood youth (most at-risk) Women, predominantly indigenous	Four technology centers Distance learning, interactive computer games for literacy in Mayan languages 200 students participate every six months Hundreds of indigenous women trained
<i>Grupo Ceiba</i> , Guatemala City (private NGO providing computer training for at-risk youth)	Windows XP, MS Office, Flash, PhotoShop, Robotics, Hardware	Free for all youth	Students contracted for computer maintenance and website design jobs through Ceiba	Community youth, at risk	English courses, psychological counseling, athletic activities Shared community house for students Over 500 placed in jobs or started personal businesses Over 1,500 students at time of study

2.3 Methodology

The questions we seek to answer with this research require an in-depth exploration of issues around the ways technology training is used and contextualized. We explore these through qualitative interview-based methods, to paint an expansive picture of how technology is placed within the larger ecosystem of services for the populations served. More than 130 interviews in five countries are represented in this research, based on approximately 1400 pages of transcripts. All of the interviews were conducted in Spanish or Portuguese, and were discussed weekly via online conference. This helped us shape the interview instrument based on each others' experiences and to dynamically include new constructs in the research instrument based on emerging questions. The entire fieldwork was conducted concurrently by all researchers between February and July 2009, usually at three locations at a time.

2.3.1 Sampling

There are two factors relevant to sampling: (1) the sampling of the organizations selected for the research; and (2) the individual respondents who participate in the study. For the organizations, we sampled primarily from Microsoft Community Affairs *Unlimited Potential Community Technology Skills Program* grantees and POETA affiliates (also Microsoft grantees) working in the domain areas relevant to this research.

We used a snowball sampling method, asking organizations that offer technology services for both people with disabilities and at-risk youth to refer us to a first set of respondents, and then using this first set as a source of referrals for subsequent interviewees. In total, we interviewed between 10 and 20 respondents at each of the 26 locations where research was conducted.

2.3.2 Interview process

We used semi-structured interviews, conducted at the technology centers, offices, homes, or in public places such as cafés. The interview instrument was first developed in Seattle by the research team and subsequently modified based on early field interviews.

The semi-structured format allowed us the flexibility of following particular tracks of questions in interviews that were relevant to the specific person being interviewed. The entire interview process, including briefing the respondent, took between 45 and 120 minutes per interview.

2.3.3 Analysis

All interviews were transcribed and coded qualitatively using ATLAS.ti. Some of the codes used were decided upon prior to the research; others were created based on multiple readings of the interview transcripts. The focus of the analysis was on factors that impact employability.

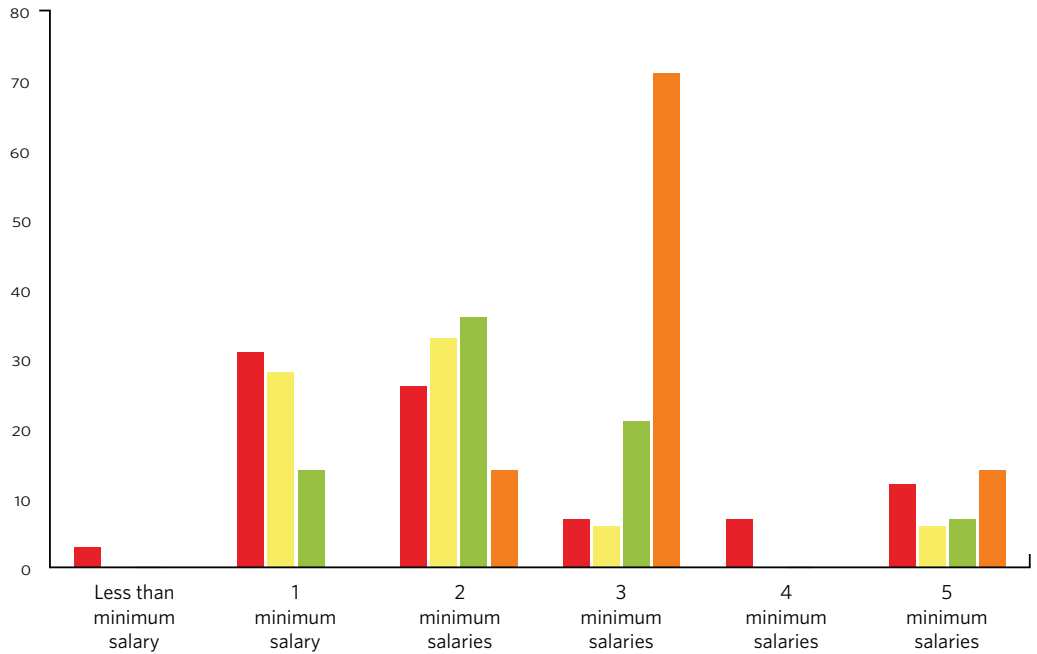
2.3.4 Biases and concerns

The first sets of interviewees at any field site were referred by organizations aware of our research. Since there are concerns that the outcome of our research might potentially impact future funding prospects of the organizations (despite the anonymity of results), there is a potential source of bias in the referral of interviewees. As experienced interviewers, we are familiar with such scenarios, and calibrated our interviews accordingly. Subsequent samples of respondents were not referred directly by the centers — these provide a useful frame of triangulation to identify any biases in specific responses that may concern us.

Since Microsoft Community Affairs, through the *Unlimited Potential Community Technology Skills Program*, is our partner (providing funding for this research) and first point of contact for many of the organizations involved in this work, this relationship impacts the selection of the specific groups for research. However, the groups themselves are not officially aligned with Microsoft, and they apply for grants through open competitive processes. In most cases, Microsoft offers a small fraction of much larger support for these groups, which operate independently within their domain of services.

2.3.5 Respondent composition

Figure 2.2 Respondent household income by country, in minimum salaries²⁸



²⁸ Household income data was not collected in Guatemala.

Brazil	3%	31%	26%	7%	7%	12%
Ecuador	0%	28%	33%	6%	0%	6%
Mexico	0%	14%	36%	21%	0%	7%
Venezuela	0%	0%	14%	71%	0%	14%

1 minimum monthly salary = **Brazil:** 465 Reais (\$260 US)
Ecuador: \$218 US
Mexico: 1600 Pesos (\$120 US)
Venezuela: 900 BsF (\$420 US)

Minimum salaries were selected as an income measure to approximately account for purchasing power differences between countries.

Figure 2.3 Interview respondents, by gender

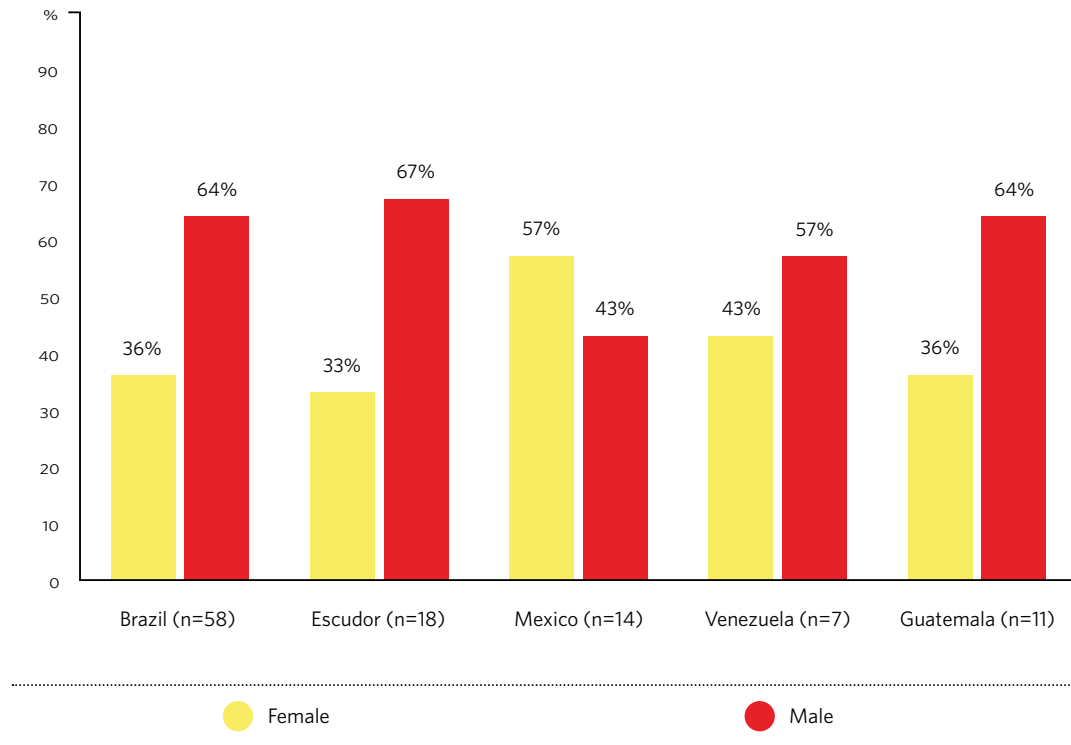


Figure 2.4 Employment activity of people with a disability compared to adult non-disabled

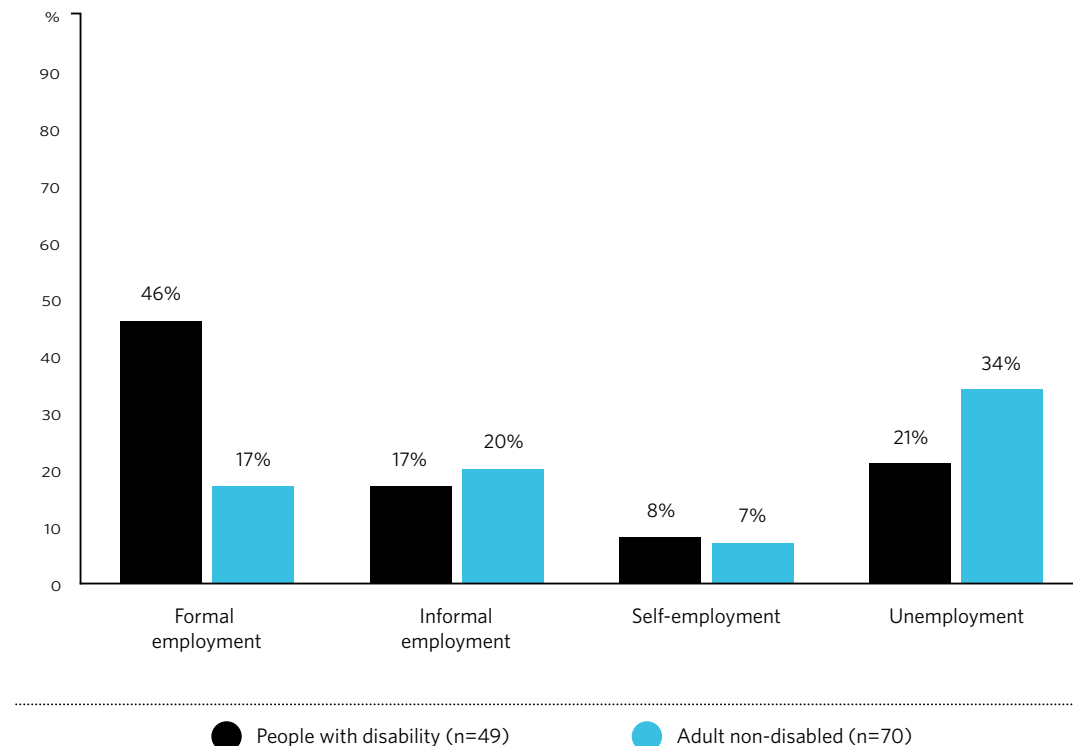


Figure 2.5 Employment activity of people with a disability, by gender

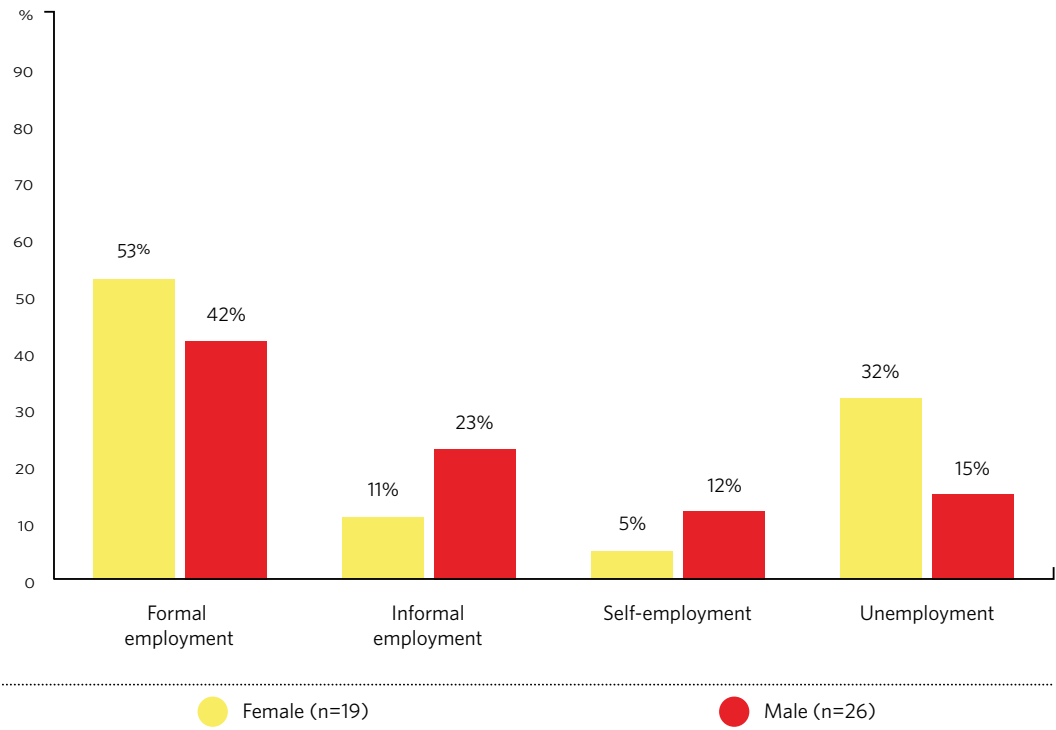


Figure 2.6 Technology ownership of people with disabilities, by gender

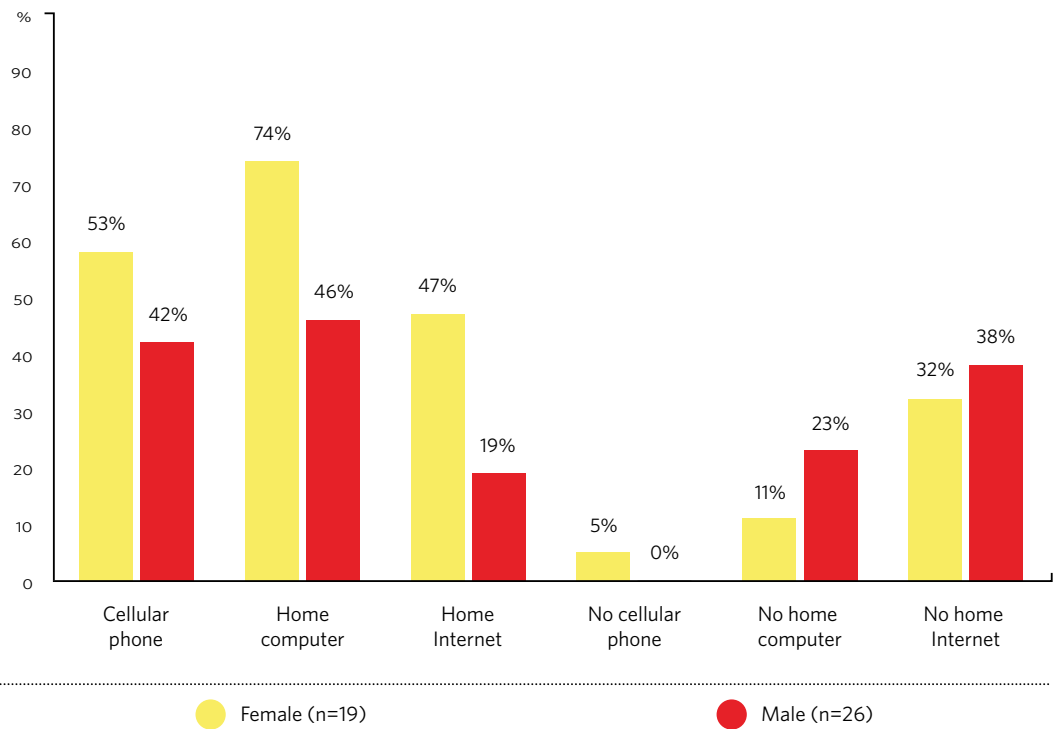


Figure 2.7 Employment activity of youth, by gender

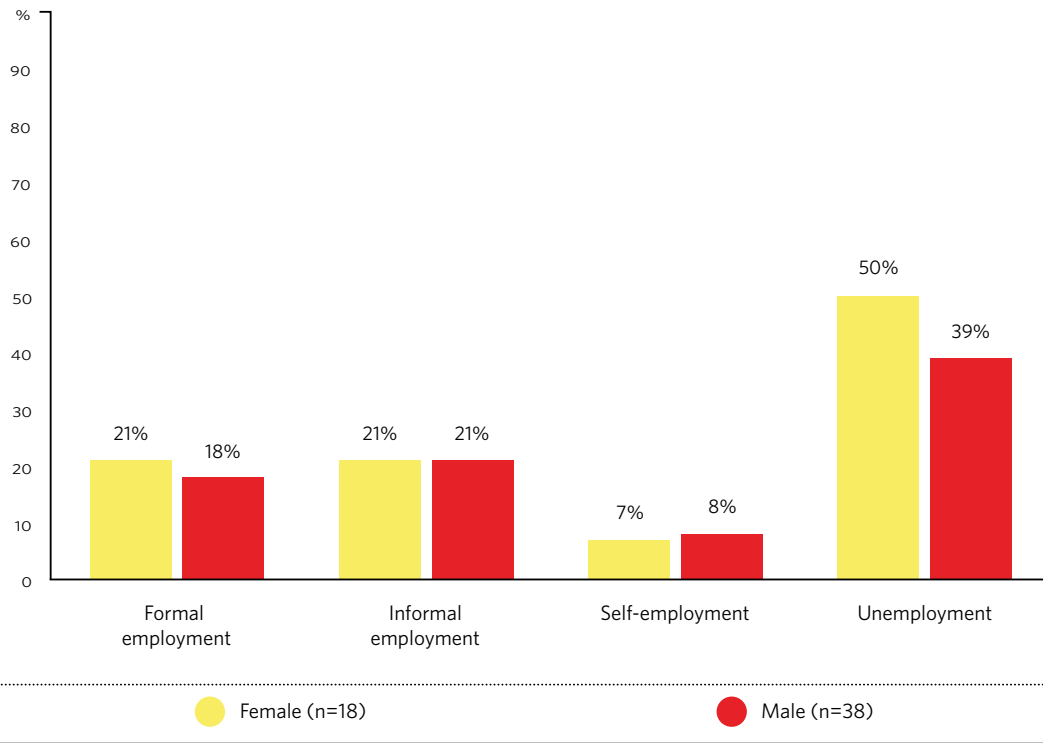
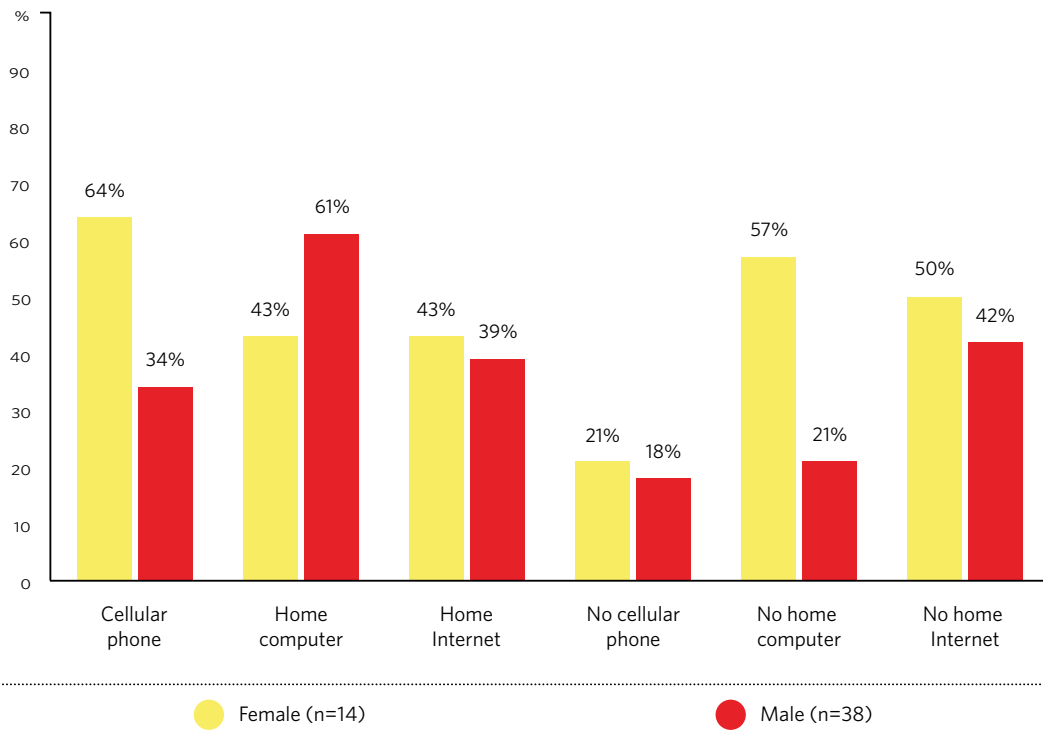


Figure 2.8 Technology ownership of youth, by gender



2.4 Personas and profiles

Before conducting an in-depth analysis of the interview data, it is useful to get an approximate idea of the “typical” technology center and user. Personas and profiles are now a commonly used qualitative technique in marketing and design research to help scholars, entrepreneurs, and engineers understand the populations they design products and services for. A persona is defined as “an archetype of a user that is given a name and a face, and it is carefully described in terms of needs, goals, and tasks.” (Blomquist & Arvola, 2002).

Thus, the persona is more a composite archetype than a real person. For the purposes of this report, it is extremely helpful to describe the typical user we aim to understand in each of these varied scenarios. Similarly, a profile (as used here) is an institutional version of the persona. Thus, we present a series of fictitious personas for the users of youth services and for-the-disabled services, as well as general profiles of the typical centers that offer such services. These help us map the environment in which these services are provided, and put a human face on the various actors involved in the delivery and use of these services.

2.4.1 Technology centers for people with disabilities

PROFILE: DISABILITY TECHNOLOGY TRAINING CENTER IN MEXICO CITY, MEXICO

Technical & Vocational Training Center number 99 (TVTC 99) is located in a large municipality in Mexico State, to the north of Mexico City. One of the most industrialized zones in the country, it is home to many large factories, such as those of the Grupo Bimbo baked goods corporation. The surrounding residential neighborhoods are dense, with multi-story low-income apartment buildings and single-family homes, including government housing tracts. Center staff characterize these neighborhoods as dangerous and associate them with drugs and criminal activity.

TVTC 99 advertises a range of vocational courses: auto repair, carpentry, industrial sewing, machine tools, electricity, screen printing, and educational assistant, secretarial, and computer skills. The national network of TVTCs is overseen by the Public Education Administration. Funds for TVTC 99 come from municipal and national government as well as from international donors, in the form of a partnership with POETA.

The center is housed in a small complex of concrete buildings with some open lawn and plaza space within a fenced and gated enclosure. The buildings house a large administrative office area, classrooms, and workshops for specific vocational training programs such as automobile maintenance, carpentry, and sewing. Two of the buildings have two stories, accessible by stairs only. The POETA computer laboratory is on the ground floor of the main building, adjacent to the administrative offices and the automobile workshop. It is accessible by small ramps. Bathrooms are on the ground floor of a neighboring building. One stall is wheelchair accessible. Toilets are flushed using a foot lever; hygienic paper and soap are not provided. A painted line on the floor leads from the POETA classroom to the bathroom.

The center is just beyond the reach of the Mexico City Metro (subway) public transportation system, but it is only 20 minutes from the nearest Metro station by bus, which stops directly outside the center. Most POETA course attendees have a significant commute — up to two hours in a combination of different forms of public transportation. Neither the Mexico City Metro nor local buses are widely wheelchair accessible.

Computer courses at TVTC 99 are held in a classroom dedicated to POETA. The classroom has 10 computers (running Windows 98 and XP), an internet connection, and a digital projector donated by the municipal government. Two teachers give classes during two periods, from 4 to 6:00pm and from 6 to 8:00pm, with nine students in each class. The students range from young teens to adults and elderly people, including people with motor, auditory, visual, and learning impairments as well as chronic illnesses. Some come to the courses accompanied by their parents. The centers also serve low-income individuals without disabilities. Prospective attendees are screened using a basic knowledge test to ensure that they have at least the equivalent of a primary education. This test is also used to screen for people with severe cognitive impairments, whom the center staff has determined it does not have the capacity to serve. The center charges POETA course attendees a nominal fee of 65 pesos (around \$5), compared to a fee of approximately 400–500 pesos (\$30–38) for other TVTC courses.

Assistive technology available in the computer lab for motor-impaired users includes large programmable keyboards (IntelliKey) and trackball mice, which are kept in storage when not in use. Center staff

have adapted mice for one user who uses two manual prosthetics. The current tool, however, does not allow her to access right-click functions without a programmable keyboard, which has to be connected and installed each time by the course instructor. The lab has access to copies of voice recognition software, but the instructor has not had time to use the software with any students. Most motor-impaired users in the course use crutches, walkers, or no aids. None are wheelchair users. Assistive technology for visually impaired users is available in the form of demonstration versions of JAWS and MAGic software, which must be restarted every 40 minutes. Course attendees do not receive specialized instruction in the use of these programs. Assistive technology for hearing-impaired users is limited to off-the-shelf headphones. A sign-language alphabet poster is displayed on the wall in the lab. Course instructors are not trained in the use of sign language — accompanying family members serve as translators.

The POETA courses offered cover beginning computer concepts, Windows, the Microsoft Office Suite (Word, PowerPoint, Excel, Access, Front Page), and internet. Courses are divided into four 120-hour blocks: (1) Windows and the internet, (2) database operations, (3) word processor and electronic presentations, and (4) spreadsheets. Manuals for the courses are adapted from a curriculum supplied by the international donor organization. Instruction in all TVTC courses, according to administrators, is 20% theoretical and 80% practical. Learning exercises for computer course attendees take the form of standardized assignments, such as developing an Access database using a predetermined list of categories and data — for example, a list of book titles, authors, and publishers for a project based on a bookstore inventory. Course attendees also use the lab computers to research topics of interest on the internet, and many enjoy activities such as creating photo and text montages in PowerPoint or MovieMaker.

The POETA classes also include a 40-hour course in workplace and job-search preparedness, which covers themes such as self-esteem, attitudes, and tools necessary for a job search (how to create a resume, self-presentation, and interview techniques). The course also includes a focus on understanding and improving self-esteem. Other employment services provided by the center are limited to advertising job opportunities; course attendees seeking employment are directed to the municipal job exchange service.

Center administrators report that they have had little success in building relationships with employers to aid in job placement for program graduates, and accordingly emphasize opportunities in self-employment and entrepreneurship — despite the lack of training and resources to support such activity.

Center attendees receive official certification documents from the Public Education Secretariat for each course completed. While certification from state sources is valued, several of the center staff and students would prefer certification from private organizations, especially a Microsoft certification.

During the first generation of the POETA computer training course in 2006, the center lacked a working internet connection, which limited the material covered. The second generation was marked by a steep decline in participation, with only one student registered at the start of the course. During the first generation of the course, the center provided attendees with free transportation service through the state Social Services administration, but the decline in participation experienced by the center during its second generation caused this service to be discontinued.

For most of 2008 the center was without a director and during that time a long-serving teacher, who was the chief trainer, passed away. The new director did not enter the center until the end of 2008. Some center staff attributed failures in implementing planned courses in English and beautician training to this recent lack of organizational leadership.

Researchers are not terribly popular at TVTC 99. For a lot of the local staff, their experience with research has been colored by the fact that researchers seem to come and go and offer no tangible value to the center, often even conducting their work in a language not spoken locally. A particularly sore point is their experience a couple of years ago, with a research group which promised links to Microsoft certification groups in return for assistance with research — a promise that stands unfulfilled.

PERSONA: USER AT COMPUTER CENTER FOR THE VISUALLY-IMPAIRED IN QUITO, ECUADOR

Anival is a 35-year-old visually impaired resident of Quito, Ecuador. He began losing his eyesight as a teenager, due to a genetic disease known as retinitis pigmentosa, and currently has approximately 10% of his

vision. He typically wakes up every morning at 4:00am, dresses himself, and dresses his two young children for school. He bundles up as he heads into the crisp morning fog from his tiny apartment, stacked precariously on cement blocks above his mother-in-law's home.

He navigates trolley cars, buses, and the hectic streets of Quito for over an hour in order to arrive on time to work each morning at 7:00am. There are few architectural adaptations to facilitate maneuvering for those with visual or mobility disabilities. Anival still has approximately 10% of his peripheral vision so he does not use a white cane to navigate within the office, as he is accustomed to the geographical layout of the workplace. He often helps guide co-workers who have no visual capability. Anival is able to navigate about the city and to and from work, but in order to be recognized by others in public he uses a white cane. Throughout his commute, it is probable that several other visually impaired Quiteños will pass by, asking for coins in exchange for a song, or perhaps selling small candies. Vending informally is a common profession for people with disabilities throughout Latin America. Anival, however, is critical of those who “choose” to earn money in such a fashion. According to him, right now is the time for people with disabilities to take advantage of employment opportunities created by mandatory hiring quotas and free training and computer courses in Ecuador.

Anival has lived south of Quito's city center his entire life, in what is considered the most dangerous neighborhood in the entire urban sprawl. Once, on his way home, he was attacked by a group of men who beat him to the point that he had to miss work for the next week. He was left in the street with no clothes, no shoes, no cell phone, no wallet, and without his white cane. He was unable to move himself out of the road until a neighbor came by and found him. He feels, like many visually impaired in Quito, that the city and the streets can be very dangerous.

Anival works at a call center and is responsible for contacting at least 30 clients daily and collecting the monthly minimum payment due on their loan or credit line. By contract he earns \$218 a month, the minimum wage in Ecuador. However, his pay is often docked if a certain percentage of his clients are unable to pay. After taxes and social security, Anival on average nets \$150 a month or less. He supports his two small children, his wife, and, at times,

his in-laws. Currently, his biggest financial concern is an outstanding bill for a private hospital to pay for his four-year-old daughter's kidney operation.

At work, Anival uses the same computer and software to communicate with his clients as his sighted co-workers, but he has two headsets — one to speak to the client, and the second to listen to JAWS, the screen-reader software that narrates visual information displayed on the computer screen. This costly software was provided by *Ágora*, a local job-placement NGO, through a partnership with FOAL (the Latin American Foundation of the Spanish Organization for the Blind).

Anival and two visually impaired co-workers manage the same number of clients as one sighted employee. Anival was training to be an electrical engineer for a multinational petroleum company when he began losing his sight. He awoke one morning, and had overnight lost the majority of his eyesight. Anival shut himself in his home for several months and cut off communication with almost everyone except his wife and children. He was depressed and had few aspirations for his future. This experience of loss stressed his relations with several of his close relatives; he still struggles to maintain working relationships with many of them. Worst of all, this drove him apart from his wife, and he is currently in the process of finalizing a divorce. Anival knows that such broken relationships are not uncommon for those who lose their eyesight, since the person is so fundamentally changed that they no longer relate to a life partner the way as they did as a sighted person. As Anival describes it, he now knows both sides of the river — the shore where the sighted stand, and the shore where the blind stand.

Although disappointed by his inability to continue as an electrical engineer, Anival worked part time and studied in order to become familiar with computers and JAWS. He first contacted the Library for the Blind at the Salesian University and was able to take personalized courses in their small digital media lab. He was then offered the opportunity to be part of a small group participating in a computer instruction training course for the blind. Upon completion, he was contacted by *Ágora* and began traveling four hours a day outside of Quito, to teach blind users how to use JAWS with computer technology. *Ágora* also facilitated Anival's employment at the call center and asked him to design a manual for teaching the visually impaired to use Microsoft Office Suite programs in conjunction with JAWS.

Anival was also part of a pilot project to train the visually impaired to utilize JAWS in conjunction with a specific call center's software. After completing this in-depth course, he not only returned as an instructor, but also became one of the first visually impaired employees at a call center in Quito. He considers himself a pioneer, especially since he now trains all of those with sufficiently advanced computer skills to complete the call center specialization course and later seek employment in a call center.

For the most part, Anival and his visually disabled co-workers enjoy their work. In fact, for many of them, this is their first formal job with benefits. However, they still feel that management is often condescending, and takes advantage of them because of their impairments. For example, when five new visually impaired employees were hired, Anival and his team were expected to train them the entire work day — they did not receive compensation for this additional responsibility and their pay was docked for not meeting their daily minimum goals.

The call center has hundreds of people working in a relatively small space, sitting at small desks with barriers between each employee. The room is loud, filled with hot, stale air, and lacks natural light. Anival works from 7:00am until 2:00pm, with one 15-minute break. During their break, workers walk across the street to a small diner and eat lunch in less than 10 minutes — then they must line up to clock in again. Those who are visually impaired are not allowed to wear sunglasses of any kind while working, as it is assumed they could be sleeping on the job.

Anival's personality livens up the workplace and his co-workers are quite fond of him, passing by his desk to crack jokes. Known as a harmless flirt, when he leaves his desk to fetch a glass of water, he always brings back two or three more for the women at nearby desks. He is sarcastic with managers and not afraid to challenge them when he feels they are acting incorrectly or unfairly.

At 2:00pm Anival rushes out the door alongside his co-workers. While most of them return to their university studies, Anival boards two more buses in order to get to his second job on time. At 3:00pm Anival begins teaching a series of basic computer classes, focusing on the use of JAWS for visually impaired students. He works for SECAP, a national government-funded vocational training site.

Although the government has recently implemented economic sanctions against companies that fail to hire a certain percentage of people with disabilities, Anival remains critical of Vice President Moreno's intentions.²⁹ He believes that people with motor disabilities have received more funding and support than those with visual disabilities. He has chosen to become involved with the disabilities advocacy movement in Ecuador, yet remains skeptical of the National Federation for the Blind and questions whether they are successful in promoting the rights of their members.

Anival is one of very few blind computer teachers in the country. Mostly self-taught, he is familiar with computer programming, highly knowledgeable on the functions of various JAWS versions, and profoundly familiar with all Microsoft Office Suite programs. He not only knows how these programs work in conjunction with JAWS, but he understands the best way to teach visually impaired students. Each day, after an eight hour day at the call center, Anival teaches three different sets of students for a six-month-long course. Many of his students are informal vendors, yet have aspirations to finish Anival's course and seek employment in an office or call center. Anival works seven days a week, but he often struggles to provide for his family. Regardless, Anival has set his hopes on a variety of technology-related careers, such as advising Microsoft on software development for the visually impaired.

2.4.2 Technology centers for at-risk youth

PROFILE: TECHNOLOGY TRAINING CENTER IN SÃO PAULO, BRAZIL

The *Paixão de Viver* (*Passion for Living*) technology center is located in the southern zone of Santo Amaro, in the São Paulo metropolitan area. The center is located on the outskirts of a booming favela with around 50,000 inhabitants. The center was founded 10 years ago by Joana Antônia, a former educator and resident of the area. According to her, the region was previously inundated with crime and drug use. Initially, the center offered only leisure activities in response to the lack of community space for children to play. It has since expanded to provide a broader set of services. Joana first thought up the idea of offering computer services because her children in the public schooling system had only a basic exposure to computers. This frustrated her as she noted the increased presence of technology throughout the job market. "The public schools are precarious," she describes, "and these kids

²⁹ Recently, Vice-President Lenin Moreno, an advocate for people with disabilities who is himself disabled, created a program known as *Ecuador Sin Barreras* (*Ecuador Without Barriers*) which funds, among other projects, trainings and workshops free of charge for all people with disabilities in order to be more competitive in the labor market.

need someone to ensure that they have a future.” *Paixão de Viver* is a faith-based group, which has its roots in *Candomblé*, an Afro-Brazilian religious practice. Several of the local youth who take part in programs offered at the center are either young practitioners of *Candomblé* themselves, or the children of practitioners. Although *Candomblé* is generally seen as supporting syncretism (the combination of different religious forms or practices), there are many people in Santo Amaro, especially those with strong ties to one or another church, who veer away from *Paixão de Viver*’s social programs because of their discomfort with the religious practices.

Paixão de Viver is perched strategically at the top of one hill. The residences on the north side of the hill are small, cement residential houses. On the south side of the hill, stretching for about one mile, are favela shacks, mostly built with red brick and corrugated tin. Most students come on foot as they live close by, those who come from farther away use buses or other forms of public transportation. As a highly residential region, the few job opportunities in the area consist either of informal jobs, such as street vendors, or working at *butecos* (small bars), groceries, and restaurants. Alongside the informal jobs, there are also illicit economic activities that youth may be introduced to through their social networks: dealing drugs on the streets inside the “community” (as favelas are often termed by residents), performing simple tasks like looking out for the police, or carrying drugs (*aviãozinhos*). Most of the community members interviewed state that the neighborhood has become much safer since the opening of a Metro station nearby, which has reduced the commute into the city center by an hour and has meant increased economic activity in this entire region. However, Joana Antônia still sees the risks of a draw to crime for youth as there are few job opportunities or worthwhile uses of spare time. She sees the center as not merely preparing the youngsters for work, but also competing as a space to spend time instead of idling around street corners. As the draw to crime can begin as early as six or seven years of age, the center accepts youth starting at these ages through their early 20s.

Paixão de Viver’s efforts focus on both skill-building and leisure activities, so sporting activities are a big part of the program’s offerings while technology courses are a small fraction of the range of services. At any given time of day, one can find local youngsters mixing their own music on one of the computers — ranging from hip hop to funk to traditional sambas — or taking classes on gastronomy. Personality development courses,

geared to employability, include grammatically correct spoken Portuguese, self-presentation, and interview skills. There is a waiting list for several of the courses. Computer courses focus mostly on Microsoft Office and web design applications. Courses are taught by instructors who are employed full-time at the center. Each instructor has a college degree and is a professional technology teacher, unlike several other centers in the city that are manned by informally trained volunteers. Technology courses typically run in one-hour periods.

The day is broken into two four-hour sessions, to accommodate the block structure of the local school, and all attending children are provided lunch. The local school has three secondary school sessions and two primary school sessions, so kids can attend whichever session they find more convenient and have the rest of the day free. This system encourages children who have other responsibilities to stay in school, but the short school day impacts the quality of education, and consequently their future potential. Students report that, especially for secondary school, the evening regular school session is the most risky in terms of exposure to criminal activity, since the recesses take place in the dark.

The center is supported in kind by ATN, a national support network which offers consulting services and online programs for technology centers around the world. The center also raises funding through a British financial company’s corporate social responsibility wing in São Paulo. One major challenge for technology centers in the region is the lack of up-to-date equipment, a source of frustration for those taking advantage of similar programs throughout the region. *Paixão de Viver* is able to sidestep this problem due to their corporate supporters. Students use the online courses provided by ATN: training in typing and Microsoft Office, as well as some distance learning, such as a course on entrepreneurship.

Waiting outside the center for a quick discussion with Joana is a middle-aged couple, Josué and Márcia. They are hoping to enroll their daughter Ana Bela in the program, but they have been waiting three months already. Josué works selling pirated DVDs and CDs in the street near the metro station, and manages to earn between R\$200 to R\$400 per month (roughly \$80-160, which is just below the minimum wage). Márcia works as a maid further north in Cidade Universitária, a wealthier neighborhood, a 90-minute commute away. Ana Bela, at 15, is the eldest of their three children. She has been spending her time outside of studies at

home with her aunt, helping care for her two younger siblings. The parents recognize that she needs to spend more time studying, but they can't afford to enroll in the paid courses in the region. Josué and Márcia's neighbors, who are affiliated with some of the religious aspects of *Paixão de Viver*, recommended the course to the couple as an alternative for their daughter.

Inside the center, Arnaldo is finishing lunch. He is a 17-year-old who was living on the street for years, selling candy. He's currently enrolled in a computer course. He was brought to the course by Joana Antônia, who convinced him through the free lunches to attend the facilities, and he now attends courses and has re-entered public school, which he had left in 7th grade. She also made him aware of the benefits the government provides to incentivize youth to continue in school, which his family now receives, alleviating the pressure on him to work.

Paixão de Viver is not affiliated with the government, although it is registered as a formal institution. Joana Antônia views the government as a top-down institution, intent on either taking control of smaller organizations or using them for political propaganda. She makes it clear that she doesn't believe the government is working in the people's best interest. She emphasizes that the center deliberately does not receive any government funds. She believes that the private sector is not only more stable in terms of long-term funding, but also provides her with the independence she needs to ensure that organization addresses the community's needs. At meetings Joana Antônia has been perceived as a "troublemaker" and has even been asked to leave.

**PERSONA: SERVICE PROVIDER FOR AT-RISK YOUTH
IN SÃO PAULO, BRAZIL**

Cristina is a pastor and head of the Christian evangelical non-governmental organization *CeAç* (*Comunidade em Ação*, Community in Action), which provides courses and community activities. *CeAç* is located in the Santo André region, on the periphery of metropolitan São Paulo. Located inside a lower- to middle-class residential area, but 15 minutes from an *invadido* community, *CeAç* provides courses and serves as a community center. (*Invadido* means "invaded" and is a less-derogatory term to refer to favelas.) Walking down her street past the small bars and restaurants, Cristina is constantly greeted by local residents who recognize her on the brief walk from home to the center. Santo André has nearly 671,000 inhabitants, and the labyrinthine

neighborhood adjacent to *CeAç* is home to some 10,000 people living in homes generally built out of unpainted mud bricks. Like most small centers on the periphery, *CeAç* is a grassroots project started by Cristina, who has continued to run the program for 15 years.

Despite the longevity of the organization, Cristina is frustrated at what she sees as inertia within the community, and blames herself for having been unable to change local conditions significantly. *CeAç* has offered training programs for youngsters in various forms, but space constraints required that they move from place to place over time, leading to somewhat ad-hoc course offerings. The current courses are held in a small room of about 150 square feet, which can accommodate no more than 15 students at a time. With a pile of boxes blocking off a good fifth of the room, the youngsters are a bit more cramped than usual for space. *CeAç* started working with youngsters initially through music courses, and this continues to be the main offering, with courses in choral singing, guitar, and keyboard. They have also added courses in high school Portuguese and mathematics, and the center is on the verge of opening a computer course. The introduction of many of these courses represents a shift toward more practical courses that could potentially raise users' job or education prospects. Cristina, while happy to add these new courses to the *CeAç* repertoire, continues to believe that courses geared to more humanistic aspects will be critical to keeping young people out of trouble. All the teaching is by volunteers, who may or may not be formally trained. Elizabeth, for example, runs the English class but has never been to college — she works at an airport where she needs to speak some basic English to passengers.

CeAç has received a number of free used computers from *Oxigênio*, an agency providing support and services for technology centers. These free computers are currently housed in the boxes blocking off the corner of the training room, and have been there for several weeks now. The problem, says Cristina, is that they have neither the tables for the computers nor the staff to teach the courses, much less internet connectivity. Unlike larger NGOs that can apply for grants and raise funds for significant chunks of operating resources at one time, Cristina runs what is practically a week-to-week operation, going to small businesses and individuals weekly for cash or kind donations, including old bread to provide to the community, and old clothes from community members to sell. One of her biggest challenges in running

all the operations from the ground up has been her inability to put enough time toward rallying support from employers to get graduates placed in jobs.

As is common for several of the small community-based NGOs in São Paulo, Cristina plays a critical role as a champion. Her will drives the organization, and she frequently sleeps five or fewer hours a night, dividing her time hectically between the church and her own family. She was born and raised in the Santo André which, in the eyes of much of the community brings her a lot of legitimacy, both as a social worker and as a pastor. Everyone in the community — including the gang members — knows her. While she has generally broad support within the community, actual participation in classes tends to be by people who are aligned with her religious beliefs. Several of the community members, while happy with the work she is doing, feel suspicious that her good work is eventually intended to convert people to her brand of evangelical Christianity.

**PERSONA: AT-RISK YOUTH TECHNOLOGY CENTER USER
IN GUATEMALA CITY, GUATEMALA**

Juliana is 23 years old and lives in a neighborhood called *El Naranjo*, which is precariously nestled on the side of a hill on the outskirts of Guatemala City. It is known to be one of the most dangerous neighborhoods in the area, if not the country, plagued by high rates of crime, violence, gang activity, and drug trafficking. Her mother left Juliana and her sister when they were just a few years old to work in the United States. She periodically receives phone calls from her mother, but within the past few years the phone calls have dwindled, as has the money. She has not seen her father in five years. The last time she saw him he was addicted to crack and grain alcohol. She assumes he is either dead or in jail. Juliana's house where she grew up is made from sheets of tin and wooden boards. There is usually a small fire burning inside, where her grandmother makes tortillas and cooks food. There is no running water or electricity. *El Naranjo* is situated on the cusp between territories controlled by the *Mara Salvatrucha* (MS-13) and *Calle 18*, two of the most powerful youth gangs in Central America.

When she turned 15, Juliana and her friends began spending time with older teenagers in the neighborhood who were associated with MS-13. She began drinking, experimented with crack and tattooed the MS-13 symbols on the nape of her neck. She also briefly dated a prominent gang member in the neighborhood until he was shot and killed — along with her older

brother — while trying to rob a bus driver. At that point Juliana's grandmother became very concerned about Juliana, and forced her to start going to church regularly with her. At first she was resistant, particularly because she feared the repercussions of discontinuing her association with the MS-13, but more importantly because those were the only friends she had.

However, after going to church for a while and enrolling in a few classes through the church, especially the baking and mechanics classes, she started to make a new circle of friends she enjoyed hanging out with. In many ways, it was finding empathy with the others who were in the classes that really helped her prepare for a life away from the gang. She was initially surprised to find they were exactly like her, rather than people entirely different from her, as she had imagined in the past. They lived in the same neighborhood, shared the same fears, had the same temptations, enjoyed the same things, and had gone through similar traumatic experiences, such as parents struggling with addiction and loved ones lost to violence. Juliana began spending more and more time around the church and with the young people she met through the classes she took there. They began to work in conjunction with the church leadership to develop more classes for the neighborhood. A young teacher, Manolo, experienced in working in conflict neighborhoods like *El Naranjo*, decided to donate his time as well. He had experience with computers and proposed to Juliana and her friends that they open a community computer lab. They agreed and began seeking out funding. Eventually, after the relationship with the church dissolved, they partnered with POETA and began offering computer classes and phased out the other vocational training courses. They called themselves *Fuerza Juvenil*.

Two years later, Juliana had completed formal computer training and was highly knowledgeable in computer repair and maintenance, robotics, technical systems, programming, and web design, and had begun teaching basic computer skills to other *Fuerza Juvenil* students. Juliana very much enjoyed the style of teaching at *Fuerza Juvenil*. Rather than use terms like “teachers” or “instructors,” they refer to them as “mediators” and promote what are called “positive pairs.” Juliana learned about computers by learning from her peers, and she later passed on her knowledge to the next student. She exudes enthusiasm when she is teaching a younger student who is just beginning to learn about computers. Juliana thanks God and her instructors at *Fuerza Juvenil* for her technical abilities and is proud of

herself for developing such a wide range of skills in just a few years. She also began taking English from a young Canadian woman who spent six months volunteering with *Fuerza Juvenil*. In addition to computer and English courses, Juliana also participated in group therapy and drug rehabilitation and spoke with a psychologist each week. At the end of her second year at *Fuerza Juvenil*, she was offered a place to live in their community youth house, which at the time was managed by the church. It served as a safe space for Juliana to get away from the gang and drug lifestyle she desperately sought to avoid.

Although her grandmother was upset about not having her physically in the house, she knew that Juliana would be able to avoid the bad influences that are prevalent in *El Naranjo*. Juliana's grandmother had one really big expectation for her granddaughter — that she would get married to a Catholic young man, become a teacher, and turn out better than Juliana's father and siblings. Her grandmother was always deeply saddened that her son fell into drugs and alcohol, and she wished that Juliana wouldn't follow the same path.

The director of *Fuerza Juvenil* decided to send Juliana on a scholarship to the Central American Youth Parliament meeting in Managua, Nicaragua. She spent several days meeting with other young leaders from around Central America doing leadership-building activities and team-building exercises and formulating a common agenda for Central American youth to work toward through projects like *Fuerza Juvenil*. She made excellent connections at this summit — Juliana and other *Fuerza Juvenil* students ended up designing the Parliament's website and won contracts for web design for other nonprofits and private companies. Juliana eventually became a mediator and was earning a living wage by teaching other students, designing web pages and repairing computers for schools in Guatemala. She then won an international recognition award for her work and was given a scholarship to go to Colombia and start a pilot project similar to *Fuerza Juvenil*. She worked on the ground with Colombian youth for nearly six months and they successfully launched a similar computer training center in Bogota, for youth living in similar situations as hers in *El Naranjo*. She was contemplating permanently staying in Colombia, but felt she needed to return to Guatemala to continue overseeing the work she was such a crucial part of.

Today Juliana finds herself co-directing *Fuerza Juvenil's* programs with Manolo. They have since moved away from *El Naranjo* — after they began directing

the program they were threatened with extortion for several months, and then one of the co-directors was murdered when exiting a public bus one night after leaving *Fuerza Juvenil's* center. Growing up in an area like *El Naranjo*, Juliana is street-savvy and knows the borders she can and cannot cross, but growing up in Guatemala City she is also very aware of the high incidence of random acts of violence, especially violence against women. Now that she is married, Juliana and her grandmother feel much more at ease with her working in areas like *El Naranjo* and commuting from home on extraordinarily dangerous bus routes. Juliana says that extortion is a common source of income for gang members — particularly charging bus drivers on average \$75 a week in exchange for their lives. More than 100 bus drivers and fare collectors were killed in Guatemala in 2009 alone — up to 17 people a day. Juliana must commute by bus up to four hours each day from her home in Zone 2 to *El Naranjo*. She leaves home by 5:00am and returns as late as 9:00pm. She runs across friends from her past and is constantly concerned with how they are judging her. Do they see her as a traitor? Or perhaps as someone who has brought something positive, *Fuerza Juvenil*, to their community?

Juliana is still friends with many of her girlfriends from her youth. Some have also chosen to leave the gang. Others have not. She does not feel hostility from her friends, but there is certain separation between her own life, which she views as working toward a positive change for her community, and those that are continuing to use drugs and be involved with gangs. Juliana feels that her grandmother's encouraging her to attend church was the first step that led her to become a leader, fighting against drugs and gang violence. With the memories of her youth still fresh in her mind, Juliana reminds herself that she could have turned out differently. She believes that when youth grow up in communities like hers, it is difficult — and sometimes by chance alone — to decide to remain with a gang or not. It is hard for her to identify why some of her friends remained in the gang; she is thankful for God, her grandmother, and the community, as well as for the opportunities she found at *Fuerza Juvenil*. She aspires to continue co-directing *Fuerza Juvenil* and hopes to support similar initiatives throughout Central America in order to combat the widespread violence and crime associated with youth gangs.



Chapter 3
Findings

Chapter 3 Findings

Our findings are arranged according to the key themes identified in our analysis. These themes were identified based on the strength of the codes assigned to them during the data analysis, and they are arranged into three core domains: (1) environmental factors, (2) program impacts, and (3) program influences.

The findings related to the relationships with — and impact of — technology centers for people with disabilities and at-risk youth are discussed within themes identified under each of these domains. The integrated discussion of themes across populations helps us discuss the larger issues around technology and development, especially our understanding of issues of perceptions, adoption, and implementation of technology. Where necessary, we separate out themes particularly relevant to either people with disabilities or at-risk youth for an in-depth discussion.

3.1 Environmental factors

We define environmental factors as those themes and ideas that are related to the overall environment in which the technology projects exist and operate. We discuss here two broad kinds of issues. First, we address issues of symbolic meaning, such as those around the discourse of technology, and issues around aspiration related to technology. The second broad set of environmental factors relates to the structure and culture of the labor market in each of the countries. In terms of the symbolic issues around the discourse of technology, and the linking of social mobility and aspiration to access to technology, we find that this is an urgent set of issues that needs to be discussed as a precursor to understanding the acceptance and adoption of technology projects in some of the most economically challenged parts of the world — often, places with seemingly more urgent socio-economic concerns.

On issues of the local labor market, we describe from the data what factors exist on the ground in terms of both the perceptions of the labor force on the part of the users of technology centers, whether at-risk youth or people with disabilities; and, conversely, employers' perceptions of youth or people with disabilities, and how these in turn impact employability.

3.1.1 The discourse of technology

Much recent work has looked at the discourse of technology and how it has grown as a powerful part of the perception of modernity and development,

"[My father tells me,] 'Son, if you don't study now when you're younger, if you don't seek to learn, when you grow up, the only job that you'll get without studying will be the bricklayer's assistant. That you will end up in pain, with your shoulders hurting, that you won't be able to stay the entire day in an air-conditioned room, working on a computer, easily."

— Carlinhos, 16, Guarulhos, Brazil

“Speaking on a professional level, any business, any person who is not up to date in technology, is a person who is really lagging behind. The biggest businesses have all the technology, all the infrastructure that allows them to be at the forefront, and the same is true of micro-businesses and businessmen as well.”

— **Juan Carlos, 54, Mexico City, person with visual impairment & entrepreneur**

research elsewhere on the perception of technology, we also found that for many interviewees the idea of the computer as an all-important and ubiquitous artifact is simultaneously a source of anxiety.

ANXIETY

For first-time users, the idea of the ubiquity of the computer further compounded issues of anxiety around computers, especially when they had no history of home or community access to technology.

“I was afraid to turn it on or to work with them. I didn’t think that I could use a computer, because I was afraid I would freeze it, by trying something I didn’t know how to do.”

— **Gregorio, 27, Caracas, Venezuela, person with motor impairment**

Such concerns were not limited to older populations — they also occurred among several younger children and youths. The issue of anxiety around technology was difficult to unpack from larger anxieties toward the formal job sector, especially among adults who felt they were slower learners than youngsters, or among people who were anxious about being judged as unable to cope with the technology that most others at their workplaces already used as second nature. Conversely, the act of overcoming these anxieties was associated with an increase in confidence and self-esteem. In general, women cited this discourse of anxiety slightly

more often than men: about 10% of women and about 8% of men mentioned anxiety about using computers. However, a greater proportion of women were less likely to have ever used computers before their technology training course: in our sample, 31% of women but only 16% of men were first-time users of technology. In the case of people with disabilities, technology is perceived as ubiquitous but also as a societal factor that can be further disabling when the appropriate adaptive technology and training is not available.

RAPID EVOLUTION AND GENERATIONAL SYMBOLISM OF COMPUTERS

Both administrators and students frequently expressed the opinion that young people are attracted to and learn computers more quickly than older populations, and that computer knowledge is more necessary for young people. Computers are seen as rapidly evolving — as at the forefront of a wave of new technology. Technology itself is seen as a field that is constantly changing and that as a result requires frequent re-learning. A common perception is the need to keep updated — to stay knowledgeable and not be left behind. This knowledge is seen as necessary due to the perceived ubiquity of technology, regardless of occupation. The view of youths as not bound by routines, as more flexible and more absorbent of new knowledge, embeds a perceived necessity of being youthful in order to keep up with the speed of technological advancement.

“Initially, computers were machines that I looked at and said ‘Anyone who uses this must have some great intellect, my God, it’s hard!’ ... When we went in the lab and began to work with the pieces, picking them up in your hand, this is a cooler, this is a memory card, this is the power source, I saw that it wasn’t that complicated.”

— **Henrique, 16, Guarulhos, Brazil**

“Young people and children learn much faster how to use the computer, as opposed to an adult who has a lot more things to think about, if they have a family, a job, they already have things on their mind that prevents them from receiving the information. ... Children have a natural attraction to computers — to learn, to discover, which then makes it much easier for them to learn”

— Guillermo, Guatemala City,
computer instructor for visually
impaired users

Interviewees made a clear connection between youth’s interests and computers. For example, in Brazil, upon querying what activities would be most useful to draw youths away from illicit activities, 23% named computers, second to only sports activities, which accounted for nearly 26% of responses (see Figure 3.1b).

ACCESSIBILITY OF JOBS UTILIZING COMPUTER SKILLS FOR PEOPLE WITH DISABILITIES

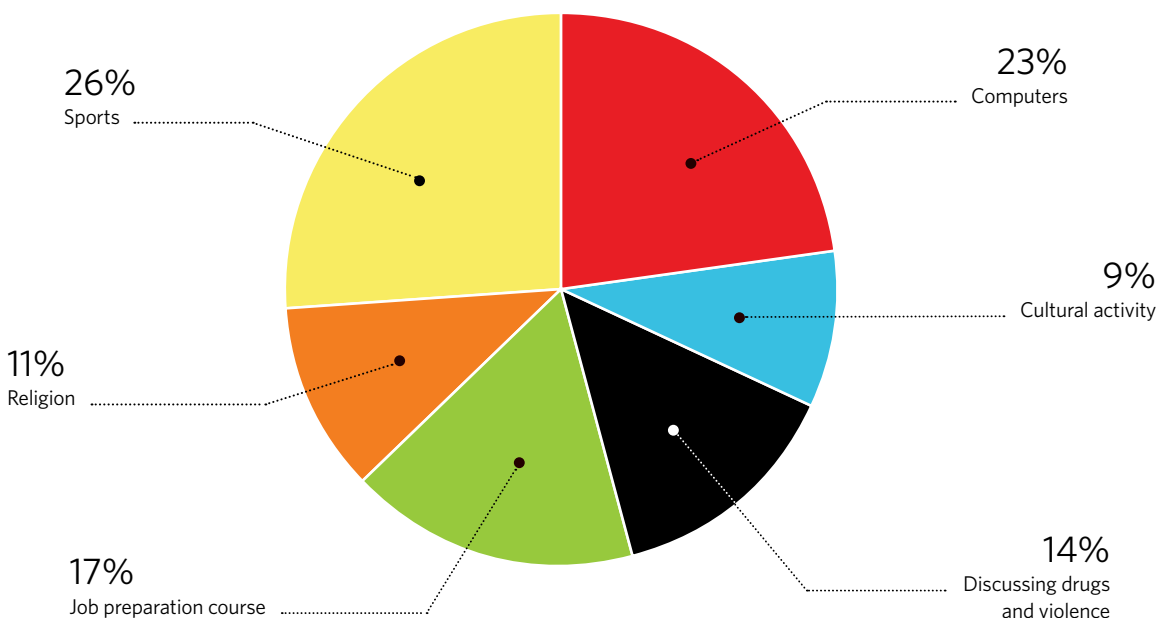
An additional discourse of technology and employment identifies jobs using computers as particularly accessible to or appropriate for people with disabilities.

This discourse was invoked most frequently by people with motor impairment affecting the lower extremities, whomay use wheelchairs or other technical aids for mobility but for whom the computer workstation can be made relatively comfortable and accessible with just a few adaptations. The sentiment frequently echoed in interviews was that as a person impaired from moving around freely, given the existing public and private infrastructure, one is better suited to work in relatively sedentary positions. In general, we also found that technology centers were most likely to provide services to people with motor impairments of the lower extremities, who were able to use computers with few or no device-related accessible features or tools.

“... when we go to search for a job they place us, more than anything, in the area of informatics, because you will be in a chair, you go in your wheelchair if you are in a wheelchair, and the whole time you will be there at your computer, you don’t have to move or anything ... It’s not a great effort.”

— David, 26, Caracas, Venezuela,
person with motor impairment

Figure 3.1b Activities cited as drawing youth from illicit activities (n=35)



“Computers were great for me. Because of my leg and arm it’s complicated. I am more limited in manual labor, but with computers it works well.”

— Raoul, 35, Tlalnepantla, Mexico, telemarketer with motor impairment

For populations with motor impairments of the upper extremities, including muscular, auditory or visual impairments, accessible technology was much more critical in functional usability of computers.³² Consequently, among these populations there was a comparatively more guarded enthusiasm about computers as a clear pathway to employment. We discuss the issues around assistive technology in greater detail in Section 3.3.8 below.

32 The lack of representation in our sample of the deaf and people with hearing impairments and people with cognitive impairment (among many diverse experiences of disability) restricts our analysis of this important discourse to discussion of motor and/or visual impairments.

“Taking the course [in computer use with JAWS] is fundamental for finding a job. ...More than anything at banks, in the famous telemarketing. There are specific areas where one can develop customer service, which is mainly where people who have learned JAWS work.”

— Alonzo, Mexico City, visually impaired computer instructor

The view of computer-based jobs as uniquely accessible opportunities for some people with disabilities has a nuanced relationship with the widely-held perception that ICT competency is seen as necessary for coping with a changing job market. Both are fundamental assumptions that influence the programming and targeting of ICT training initiatives for people with disabilities.

3.1.2 Aspiration

The growing attention to issues of aspiration, as a measure within development studies, has expanded the conception of development from rigid binaries of

social attainment (e.g., skilled versus unskilled) into broader ideas of the self-perception of individuals (and of social groups as a whole) regarding their abilities and potential within a socioeconomic ecosystem. The ideas behind the “capacity to aspire” as initially developed within the field of anthropology (Appadurai, 2004) referred to aspiration as a first step toward being able to step out of poverty. For our research, aspiration has been one of the most important environmental themes defining users’ perceptions of the programs and their motivations for participation. In Figure 3.2a, we map the major themes around aspiration that emerged in our analysis of the interview data.

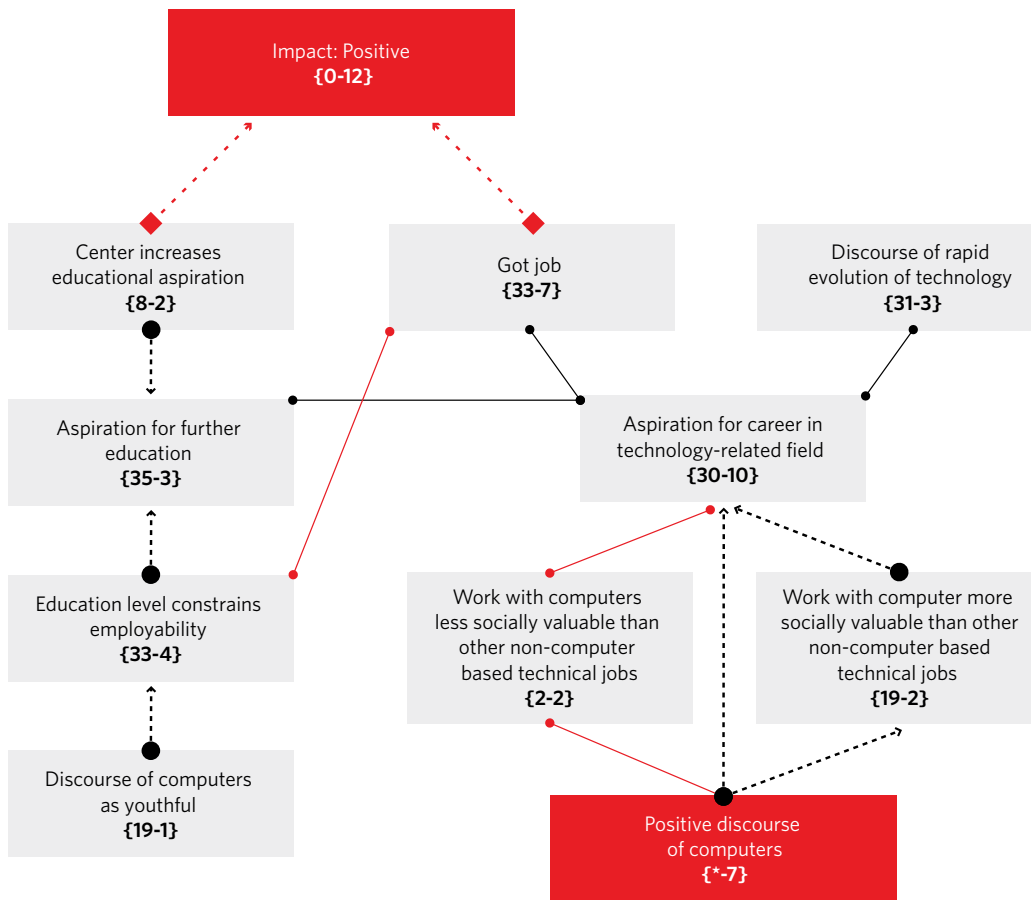
Figure 3.2a shows the two parent categories, in red, under which we see aspiration appear in the data. On the right side of the figure is the “positive discourse of computers,” which encompasses a number of factors feeding into aspiration. These include a strong skew toward an idea that technology-related jobs are socially more valuable than other jobs, including other white collar professions (even though, as we see above, a few respondents did not agree with this point of view). This perception pushes individuals to aspire for careers in technology-related fields — which, as we see in the data, results in one of two outcomes: either actual employment in technology jobs, or an aspiration to build more skills that would lead toward such jobs, including more advanced technical training or formal education or both.

ASPIRATION AND EMPLOYMENT

Figure 3.2a also illustrates the impact factor. What we find in the data is a crossover effect between the positive discourse (a higher theoretical construct) and the more realistic construct of positive impact (on the left side of Figure 3.2a). Our model does not allow for drawing causal conclusions, but we might make a relational assessment. The observed impact, among both people with disabilities and at-risk youth, would be assessed on the basis of enrollment and intent to build further technology skills — in particular among those who did not immediately find employment in technology-related jobs. It is useful here to look at the nuances of responses by various categories of technology users.

The sample showed a strong preference, especially among the younger respondents, toward technology-related jobs. Indeed, there is an inherent bias in the sample, with respondents physically inside or connected to technology training centers. However, two factors make this a relevant finding. First, the population represented

Figure 3.2a Map of aspiration themes



●— is associated with —●

●--- is cause of --->

■- - - is a - - ->

●— contradicts —●

The first number in brackets is the groundedness, i.e., the number of times the code appears.
The second number is the number of relationships.

here was fairly poor, typically earning in the range of one to two minimum wages in all the countries we surveyed. This population in general has limited access to white-collar service sector options and limited access to further education, nonetheless a primary aspiration was to work within a technology-related field. Second, the technology centers, as shown in the tables in Section 2.2, offer fairly basic training — most users can expect to leave a technology center with the basic ability to use office applications, but not advanced programming or analytical computing applications. However, for most respondents the category of technology sector is itself nebulous. For instance, many users saw a job with any form of direct interaction with a computer, including casual administrative work, as “working with computers.”³³

In breaking up the data on aspiration into the two constituent samples (people with disabilities and at-risk youth) we find two interesting trends. First, not surprisingly, younger people have a far greater interest in pursuing opportunities for further education.

The relatively higher desire for further education among the at-risk youth category was the most striking distinction between the two samples, especially since the sample of people with disabilities was primarily comprised of adults ready for the work-force who were coming to technology centers with a desire or need for vocational qualification. In contrast, the youth-oriented centers served a variety of purposes including, at times, simply occupying free time or broadly supplementing

33 Figure 3.2b also shows that the desire to be self-employed is rather limited in comparison to getting a job in the formal sector. The “formality” related impacts of such technology centers are discussed later in this document.

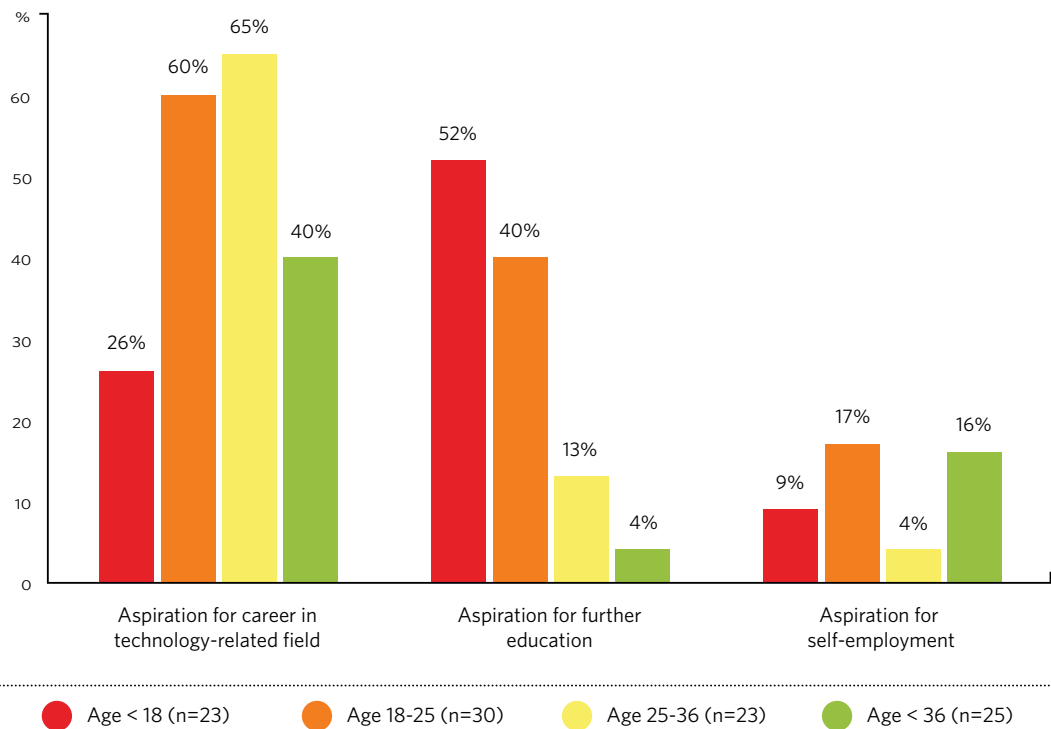
“I think someone who works with a computer [is more highly valued than an auto mechanic]. Because the people who work like this are the people with more vision. Because today the world is full of technology. The person may know how to work on cars, but always will need the ability of working with computers. ... I think computers are much more valued than auto mechanics.”

— Angela, 15, Capão Redondo, Brazil

their classroom learning experiences. It is also clear that there was little significant gender difference in any of the responses, with the exception of a slightly higher interest in entrepreneurial work among male persons with disabilities, corresponding to a slightly higher stated preference for technology-related jobs among females with disabilities. Here we would note the comparatively higher rate of continuous participation in the workforce by males with some disability — often in some self-employed activity, whereas comparatively more females had no prior work experience.

In returning to a point raised briefly at the start of this section, it is also useful to revisit the power of the discourse of pride associated with technology jobs. In Brazil, when asked which occupation was preferable, youth respondents overwhelmingly favored a computer technician over an auto mechanic by a rate of 10:1.

Figure 3.2b Stated aspirations, by age³⁴



34 This chart displays the percentage of users in each age group who mentioned the selected aspirations at least once in an interview. It includes both at-risk youth and people with disabilities.

Figure 3.2c Aspirations for technology jobs: people with disabilities

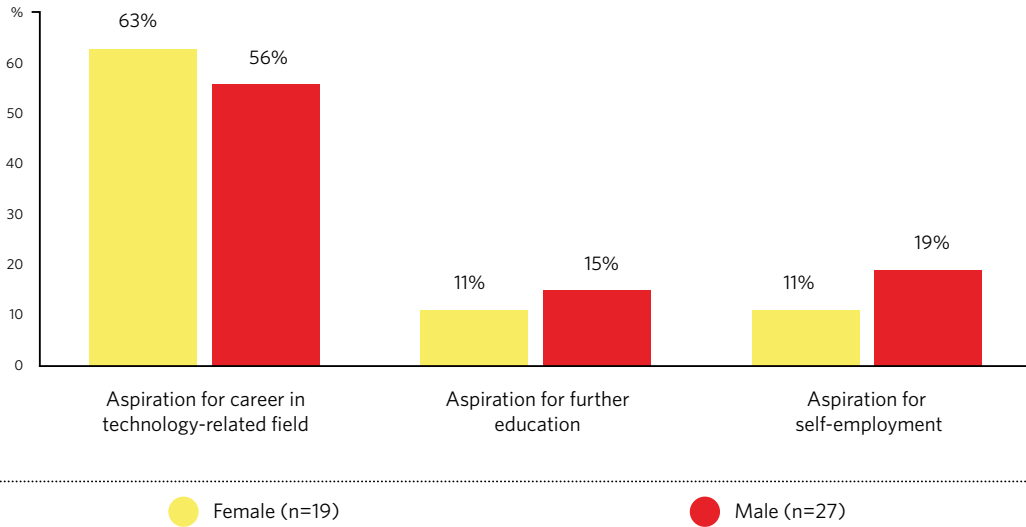
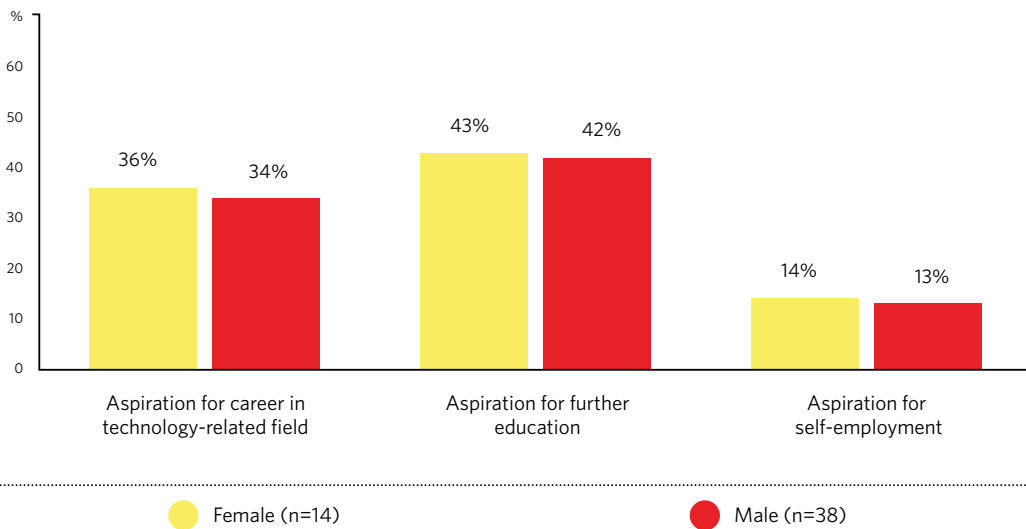


Figure 3.2d Aspirations for technology jobs: at-risk youth



“A system operator can’t look badly upon a mechanic because they’re dirty with grease. I think that you have to be humble, have humility. . . . Because the mechanic earns little. And the people think about this — money — here, man!”

— Rogério, 28, Capão Redondo, Brazil

These results, while not sampled broadly enough for statistical significance, are important in gauging the aspiration for employment among inner-city youth — especially because past work in this area has failed to demonstrate a strong association with white collar job aspiration in low-income neighborhoods where adults do not strongly participate in the labor force (Cook, Church, Ajanaku, Shadish, Kim, & Cohen, 1996; Bauder, 2002). The aspirational discussion on labor formality cites past work on issues around choice of employment and retention in the formal sector for low-income youth, including a range of non-economic factors as well as perceptions of pride and place (Bourgois, 2003).

“[What post would you like to rise to?] Computer repair and maintenance. And to keep learning, keep getting ahead. In the company there is computer repair when the machines start to fail, and as one continues to learn, hopefully I can take a course in computer maintenance.”

— Pablito, 40, person with motor impairment, Quito, Ecuador

ASPIRATION AND EDUCATION

As we see in Figure 3.2 (c & d), there is a high stated preference for higher education among at-risk youth, as compared to people with disabilities. However, given the statistics on higher education presented in Table 1.2, we find a mismatch between the overall low participation in the education system and the high stated preference for higher education among center users, particularly in Brazil and Guatemala. (On levels of participation see also: Kempner & Loureiro, 2002;

Torres & Schugurensky, 2002; McCowan, 2006; Eckert Baeta Neves, Morche, & Cruz de Anhaia, 2009.) Likewise, statistics reveal extremely low access to education for people with disabilities in Latin America.³⁵ Our focus, however, is more specifically on at-risk youth and access to educational opportunities.

“I didn’t hope to go to college before I took this course. I only started intending to head to college in this area due to this course. I liked computers, and it seemed like this course ‘fell from the sky’ for me, and I got the idea of going to college to study informatics after going to this course. . . . it changed my thinking informatics changed it a lot.”

— Adriana, 17, Guarulhos, Brazil

While the small size of this sample and the inherent self-selection bias among technology center users does not provide a statistically reliable comparison, it raises the question of how and why higher education is functionally seen as an option among low-income youth. The low numbers on access to higher education in both Brazil and Guatemala (compared, for instance, to around 30% in Uruguay and Argentina) highlight the institutional weaknesses of educational systems.³⁶ A recent survey of Latin American youth states that 25% leave school due to work reasons, and another 35% leave school due to family or economic reasons.³⁷

“This program [called alternative formal education] was intended for those young people that we were attending in the street that had not finished primary and secondary studies. . . . the idea was to create a curriculum design that offered them an interactive space that is different from the traditional system that is elitist, that leaves poor people tossed to the side.”

— Maco, Guatemala City, director of youth training center

Nearly 40% of all respondents in Brazil spoke resentfully of the public education system, frequently stating that it had not prepared them for higher education or jobs. In analyzing the data, we find that for a large number of respondents, the technology center was a proxy for vocational education, as preparation for a possible re-entry into higher education or a stepping stone to advanced technical training.

35 The World Bank estimates that about 20 to 30% of children with disabilities are attending school in Latin America (World Bank, <http://go.worldbank.org/OCFI93GX30>).

36 International Labour Organization, 2008.

37 International Labour Organization, 2008.

“When I was a little girl I had always wanted to study...but since I have always been disabled and in a wheelchair plus I am from a rural area, I would have had to walk or ride a horse to get to school, so they never let me go to school... I have always been very frustrated with the entire idea that I have never been able to study...later on I had the opportunity to study but I had to drop out at 22 years old... I am also guilty because I had a child as a single mother...”

— **Beatriz, Quito, Ecuador,**
person with motor impairment

Of 52 students interviewed in Brazil, six informed us that they had become more interested in finishing school or pursuing other forms of education due to their experience at the course. The artifact of the technology center graduation certificate was valued by students as a formal stamp of approval of their abilities, and employers interviewed in our work also valued such certification. Thus, the certificate often filled the gap of a formal educational degree that the youth otherwise had no access to. However, while several employers recognized that the certification was valuable, they did not consider it to be an adequate substitute for a college or high school degree. The graduates’ perception of the value of a certificate was higher than the actual value employers associated with certificates.

3.1.3 Labor market factors

Both of the groups studied in this work shared a common disadvantage of weak formal relationships with the labor market. Thus, the functional translation of “employability,” through technology center courses or any comparable vocational training module, must first negotiate the burden of an institutional history of exclusion. Employers interviewed were cautious about hiring decisions related to either group. Likewise, the recipients of technology center training had greater

connections to informal-sector jobs, primarily through others with shared identities or geographies. Under these circumstances, labor market factors, especially those around the move to formal-sector jobs, constitute important environmental factors for discussion.

FORMALITY AND INFORMALITY

Formality and informality are not dichotomous categories. Nor can employment be defined as a binary opposition between having a formal job and being unemployed. The formality distinction, while continuing to evolve, has been loosely defined as follows: “formal” indicates regular employment or professional entrepreneurial work within the organized sector, including registered enterprises and the government; and “informal” indicates unregistered entrepreneurship or irregular forms of casual labor (Ram, Edwards, Gilman, & Arrowsmith, 2002).

For a large number of individuals from low-income neighborhoods, a typical pattern is multiple informalsector jobs, with stints in and out of low-level formal-sector positions. What technical training accomplishes, in one sense, is to move the recipient toward a white-collar position, likely at a starting level. Such jobs tend to be full-time positions which follow fairly standardized formal employment processes.

“... [Working informally,] I have flexibility. In other professions, you have to live your life on the schedule of the job. ... when I need more money, I just work more. For me it’s good.”

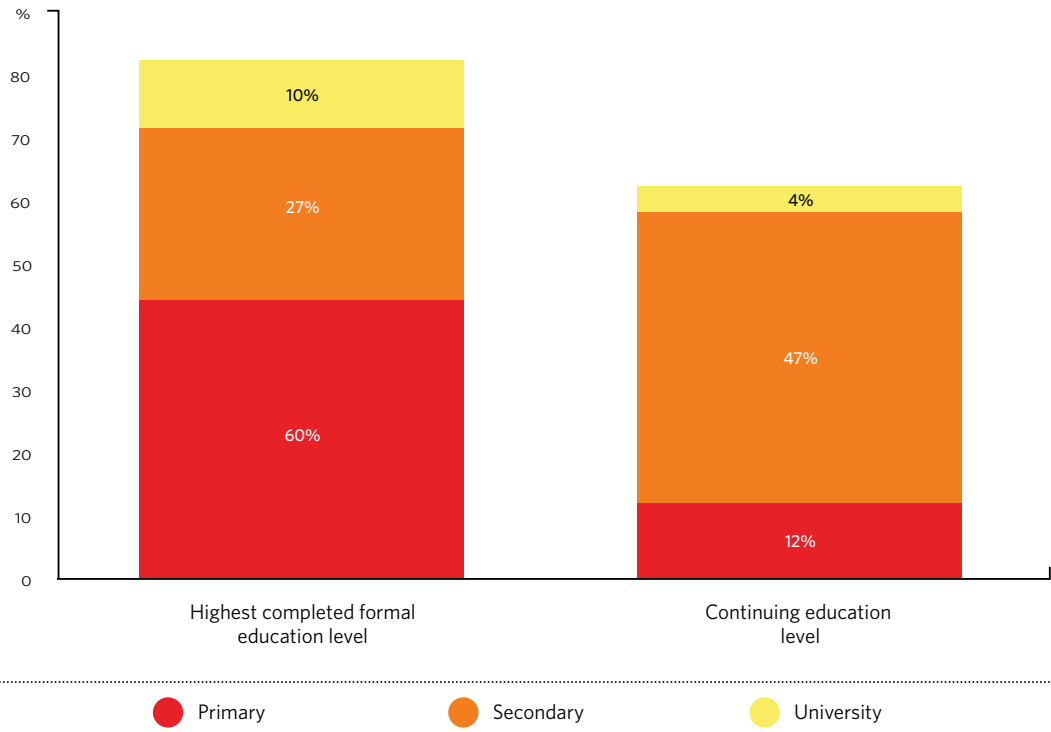
— *Elisa, 34, São Paulo, Brazil,*
informally self-employed hairstylist

“It is more important to have a source of employment [than the flexibility of informal work], because you have insurance, when you are sick you can go to the hospital on insurance to be attended. You have a fixed salary even if it rains, if there is thunder and lightning, sun, you have a fixed salary. Working in the informal economy is very hard.”

— *Adan, Quito, Ecuador,*
person with visual impairment,
works as informal vendor

For those respondents with disabilities, Figure 3.3a shows that, although training pushes recipients toward

Figure 3.2e Education of Brazilian technology center users



formal employment, there remains a very significant component of informal employment even after training. The sample here, while over-estimating employment among people with disabilities (due to self-selection), shows that only about half the trainees are absorbed into formal-sector positions, whereas for at-risk youth, the proportion is almost 25%. Although we do not have complete data on the extent of active choice in employment within the informal sector, we are aware anecdotally that a large number of people, primarily those with disabilities, choose to work in the informal sector out of personal preference, including casual work such as lottery-ticket sales, despite the lack of economic security or social pride associated with such casual work.

The reasons behind such preferences are various and range from a purely economic rationale to cultural issues around accepted roles in society. On the whole, this limited numerical evidence on formal employment for adults with disabilities after ICT training supports what we know qualitatively from interviews. We found that a significant number of graduates, especially in Venezuela and Ecuador, find jobs in service-sector positions

after training. (Inter-country variation is examined below, in relation to issues of mandatory employment policy that significantly expand the available formal-sector opportunities for people with disabilities.)

COMPUTER COMPETENCE AS EMPLOYABILITY THRESHOLD

A strikingly universal theme to emerge from interviews with users, administrators, and employers alike was the idea that basic computer competence was an employability threshold, regardless of whether or not a specific job required daily computer use. In several of the interviews, sampled in the quotes below, respondents described even low-level service-sector jobs, with very unlikely interaction with technology, as “needing the employee to be prepared” in computer skills. These perceptions reflect an understanding of labor market evolution within a global shift toward tertiary or “knowledge-based” economies, as well as the increasing penetration of ICT in economic and social life. Such claims are consistent with recent work on Latin America that has characterized employability as “more and more a matter of having generally relevant competencies, and less and less a matter of having specialized skills” (Pérez Sáinz, 2005).

“...every time I would go to present my resume to an employer they would ask me if I knew how to use a computer and that was when I truly realized that it was so important. And if I did not know about [computers] then I would not be able to find work anywhere.”

— **Beatriz, Quito, Ecuador,**
person with motor impairment

Based on the expressions of those interviewed, we define basic computer competency as the ability to recognize the parts of a computer and use input devices to type and navigate graphical interfaces, along with familiarity with common application environments and features. These competencies form the basis for most computer training course curricula, emphasizing the basic functions of hardware, common operating systems, and software suites. Users themselves generally perceived such courses as “basic,” but not necessarily with a negative connotation. Many respondents

expressed an aspiration or desire to move on from “basic” to advanced computer training, including web design, photo editing, and basic networking skills.

“What we principally require is English. We test their conversational skills in English, and if the person has experience with computers, it’s better, because everything today revolves around computer skills.”

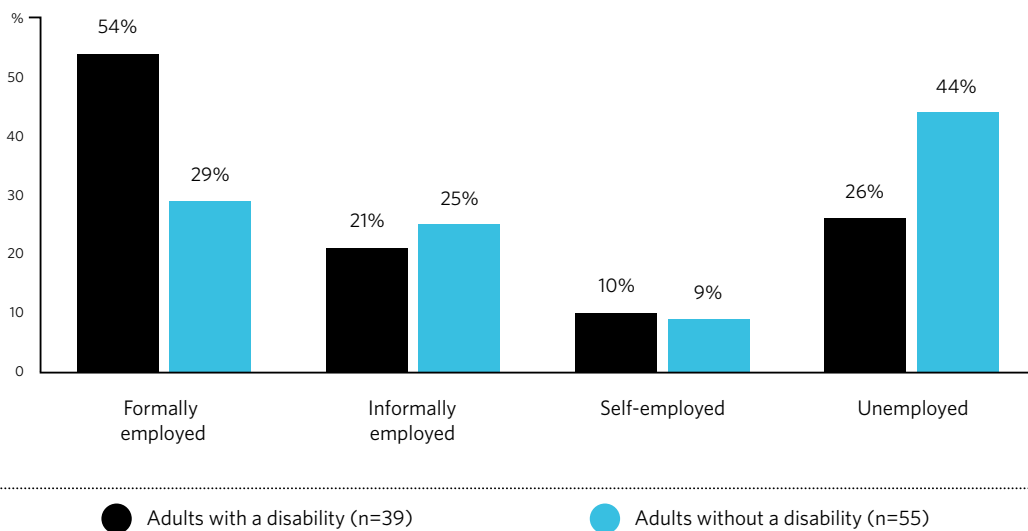
— Augusto, Guarulhos, Brazil, human resources manager, local employer

“Society itself, shops, companies need qualified staff; they need trained employees. The job market demands that people have basic knowledge in informatics to be inserted in jobs. When I was young, typing was very important...but nowadays you have to know basic functions of the computer and be willing to learn...otherwise, you are going to stay out of the job market.

— Nery Braga, Secretary of Social Inclusion, Municipality of Brumadinho, Brazil

Most respondents conceptualized computer training not as a gradual acquisition of discrete skills, leading one to become progressively more employable, but as

Figure 3.3a Formal economic activity and disability³⁸



³⁸ Unemployment here is over-estimated among adults without disabilities, since a large number of the respondents included in this sample were transitional — recently out of high school and technology center training.

“Today, the person who doesn’t know computers and English is a little bit obsolete. It becomes more of a necessity every day. You are an architect, you are an engineer, dentist, but do you know how to use a computer? No? That would be a little strange...”

— Yolanda, 30, Campeche, Mexico, person with motor impairment

a step function. Thus, complete unfamiliarity with computers was associated with relative unemployability, and new-found familiarity with computers after the intervention of a computer training course was associated with relative employability. Several users, like those quoted in this section, were openly dismissive of people who were unable to navigate basic computing functions.

TECHNOLOGY ARTIFACTS

A great deal of research emphasizes the importance of social networks in job-seeking, specifically in relation to Latin America (Espinoza, 1999; Calvo-Armengol & Jackson, 2004). Research has also found that for low-income populations, the role played by social networks can define either access to employment or lack thereof (Reingold, 1999). Such issues are further complicated where poverty is stigmatized (Perlman, 2006) and when the job seeker has one or more disabilities (Crudden, McBroom, Skinner, & Moore, 1998).

For a large part of our sample, weak familial and neighborhood social network connections to formal jobs was a major impediment in accessing job opportunities. In the case of people with disabilities, this impediment was evident in the lack of institutional segues into formal employment. In such scenarios, the physical artifacts associated with the job searching process — such as the resume or the computer used for emailing and job searching — can help to bridge this gap. In a broader sense, the technology center may in itself be an artifact, especially where issues of spatial discrimination make a person’s address a liability, as for some urban slums in Brazil and Central America (Cardoso et al., 2003).

“I learned to [use email] in POETA, because before I didn’t even know, but basically my objective was for when you go for a job, they always ask you for it. And I didn’t have one. That’s precisely why I decided to create it.”

— Daniela, 31, Tlalnepantla, Mexico, person with motor impairment due to chronic illness

“In general [course certification] doesn’t end up weighing [in hiring decisions]... we worry more about looking at [candidates’] behavior. How are they presenting themselves? ... [W]e get many people from the First Job [a government internship program] who never had contact with the job market, don’t know how to respond to someone, if there’s a boss, don’t know about a hierarchy, don’t know how to respect rules, don’t know how to respect norms. ... So this for us is the most important.”

— Juliana, São Paulo, Brazil, hiring manager, local employer

The artifact that was most commonly referred to in discussion was the resume. For youngsters from low-income neighborhoods, the resume was seen as a mark of legitimacy and was often spoken of in terms of raising one’s self esteem. Such pride was in many cases simply because the resume — especially an electronic resume — was seen as a tool of modernity. In other cases, the resume was seen as an artifact of the evidence of one’s basic competence with technology use, showing that one was able to design and produce one’s own resume.³⁹ For people with disabilities, the “first resume”, likewise situated in an interesting space (as seen in the quote from Daniela), represents one’s own independence in the job search process.

“[I learned how to make my resume] in the centers, in the Lan Houses [cybercafes]. Electronic resumes. I don’t send paper resumes, only if they ask for it. I send it more often by email.”

— Arnaldo, 20, Capão Redondo, Brazil

³⁹ A significant share of respondents did not know how to prepare a resume, and had one made by a colleague, or by a local professional.

or support entrepreneurial ventures. One program administrator commented on a disconnect between the high-level prioritization of entrepreneurship and the ineffective implementation of such projects:

“...the schools in our country are generating a market of unemployed people...So we intend to emphasize the generation of small businesses... These are policies that come from the top level. President Calderon made an announcement, as well as our Sub-Secretary of Post-Secondary Education, that they were going to support the generation of small-businesses...[Programs to encourage entrepreneurship] have not come down formally, have not been well-implemented. You tell someone who has difficulty eating well three times a day, or eats well once a day more or less, now you are going to be a microentrepreneur. It’s laughable...There are programs, there are courses for this size of microentrepreneur which are very extensive, but they do not have the content that people want.”

— Miguel Montero, Chief of Relations with the Productive Sector, CECATI 65, Tlalnepantla, Mexico

3.2 Program impacts

In this section, we delve into some of the key measurable impacts of the technology training programs for both populations served. At the most basic level, the program facilitates employment. To understand the ways in which this affects employability, we seek to go beyond the binary question of whether or not a participant got a job, to describing qualitatively the nature of impacts.

As we see in the relationship diagram, although getting a job had the strongest weight, it is associated with a number of other positive impacts of the technology center program. On the lower half of the figure, we notice that some of the same factors that have positive associations with getting jobs also offer contradictions. Such contradictions can be associated with negative impacts, such as mismatched expectations of the course attendees (among the heaviest weights of all coded themes related to impacts), lack of market value of certification, and insufficient training for real-world workplaces. This chart also underlines the difficulty of quantitatively measuring impacts other than job creation, which itself

suffers a sampling bias because of our referral-based selection of respondents. The other measurable factors — such as entrepreneurship, asset purchase, and increased communication — do not have very sizable effects in the short run. We focus our attention here on some more nuanced themes that emerged in the research.

“I felt very good emotionally with other people with a disability, I like the companionship...we are all united, we have conversations. Yes, I have liked the course a lot, but I have (also) met people who I never knew before, and there are more visually impaired people to meet.”

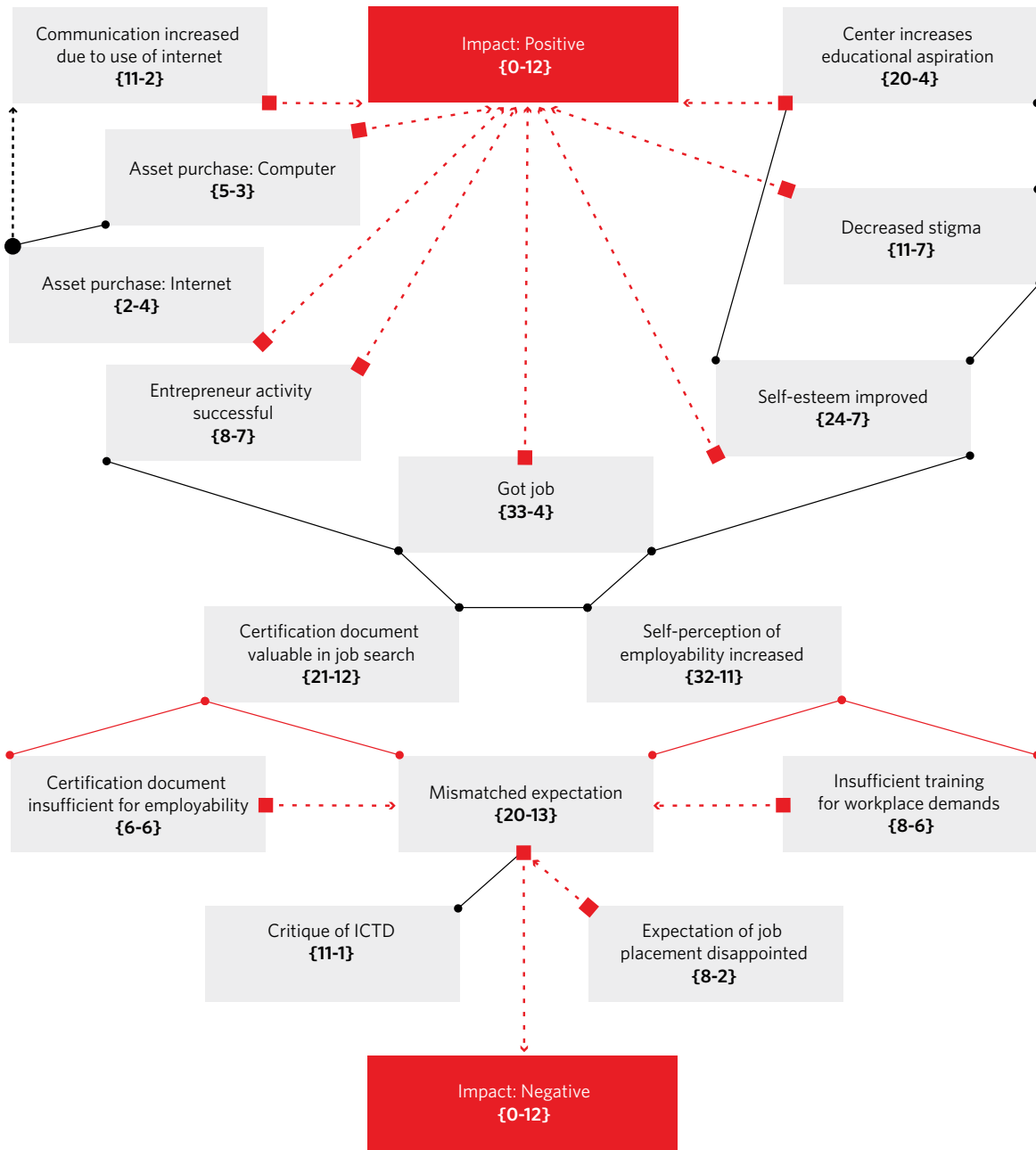
— Vilma, 23, Quito, Ecuador, person with visual impairment

3.2.1 Builds community

For people with disabilities in our sample, community-building was often dependent on their ability to navigate social and economic spaces. Building on past work, we know that access to institutions can be a critical part of community development among people with disabilities (Asch, 1984; Kuipers, Kendall, & Hancock, 2001; Wynn, Stewart, Law, & Moning, 2006). In all the locations sampled, there was initially extremely limited access to other institutions shared by other people with similar disabilities (such as associations of people with disabilities). The only exceptions to this were activities related to athletics, music, or religion. Technology centers were able to play an important role in helping build economic and social networks.

“My entire life, since kindergarten, primary school, secondary school, preparatory, university, I had always been with people with normal abilities. For me it [POETA] was like a club, like a club where we all spoke the same language because we all had a disability. What was different, what was strange, was

Figure 3.4 Relationship chart of program impacts⁴⁰



40 This relationship diagram includes several impact factors which emerged from data analysis but were judged to be less strongly substantiated, and are therefore excluded from in-depth analysis in this report.

The first number in brackets is the groundedness, i.e., the number of times the code appears. The second number is the number of relationships.

not having a disability, not the person who has one. We felt like we were in a social club. In addition to preparing us in computers it was like a community in which we felt understood. And beyond that it was one of the first things that I did that motivated me more as a person, and I started doing other activities, but for us ourselves, people with a disability.”

— Yolanda, 30, Campeche, Mexico,
person with motor impairment

Thus, while course offerings themselves were valued, the respondents appreciated technology centers as gathering places as well as safe and non-judgmental social spaces. A very significant number of people with disabilities instantly referred to this during interviews as their main “benefit” from the centers. While some interviewees described relationships that lasted only as long as course attendance, others maintained contact in the form of friendships, mentor relationships with instructors, and romantic relationships with other students. While the role of technology may be marginal except as a draw to courses, the establishment of wider social networks could impact employability through references, communication regarding job opportunities, and increased self-confidence through finding community within a society that tends to discriminate heavily against people with disabilities.

Some interviewees cited these relationships, and some successful examples of people sharing a similar impairment, as aids to motivation and increased self-esteem. This was notable especially in institutions which employed people with disabilities as course instructors or in other positions. Respondents’ comments also suggested that these relationships may relate to wider awareness of disability identity, as well as the desire to work on behalf of movements advocating for greater equality for people with disabilities throughout all parts of society, not only the labor market.

For youth as well, the idea of the technology center as a safe space emerged in discussions with various stakeholders: administrators, parents, and the youngsters themselves. Due to the peculiar nature of urban violence in Brazil and Guatemala, there was significant concern about the physical safety of youngsters living in these neighborhoods (Frix, Freistadt, Neff, & Pal, 2009). Just being a young person navigating through daily life in an urban slum was considered risky, given the lack of

adequate public spaces for recreation or quality, institutional education for youngsters. Under the circumstances, the establishment of a technology center was at times seen as offering a safe space for youngsters to simply spend time and create a constructive community, especially in violent and dangerous neighborhoods.

“We’re not in this stuff, drugs, prostitution, ... it’s like a shelter for us. It’s better for us here, than to be in the street. In the street, a car could pass by, or there could be a stray gunshot from a gunfight. Here, no, there could be a shootout below, but we’ll be here inside.”

— Carla, 15, Capão Redondo, Brazil

While this was a far weaker theme, from the user perspective, than the community-building equivalent for people with disabilities, there was much stronger buy-in from administrators and program developers on this specific added value of community technology centers. The idea of these establishments as a potential “safe space” has been part of the justifying discourse of technology centers from its earliest days and is discussed in past research (Resnick, 2002; Jacobi, 2006). However, actual evidence of the spatial function of reducing or avoiding violence has been anecdotal at best. That said, the discourse of violence itself is so pronounced in the

“Our main goal here is just to keep kids off the streets. The street is where they are the most vulnerable and in danger. Lots of our kids are stopped on the street by police because of how they look, how they dress, or their tattoos, and they can tell them, ‘Leave me alone. I am headed to work right over here because I work here as a systems administrator.”

— Nico, 23, Guatemala City, former beneficiary and current peer mediator at youth technology training center

discussions with respondents that the safe-space theme nonetheless emerges as an important characteristic, whatever its quantifiable impact in actually reducing violence. For instance, in Guatemala City, it was common to hear youth talking about others in their immediate circles who did not come to the centers, but were in gangs or participated in some type of illegal activity that increased their exposure to violent and dangerous acts.

3.2.2 Creates pathways to employment

Past studies have shown that the single most important driving factor that brings low-income users to technology centers, or to other forms of technology training, is the hope of eventual employment (Ferraz et al., 2004). Our interviews indicated that a significant proportion of the attendees at technology centers, both for at-risk youth and for people with disabilities, were able to find employment. However, due to sampling biases and the lack of available data on graduates as well as dropouts from the programs, we cannot estimate an accurate rate of employment for entrants into the program. Continuing our previous conversation on formal employment, it is interesting to see several trends emerge among those who went through the training and did achieve formal employment. Thirty-two out of 101 sampled individuals who went through job training found formal employment. The proportion of trained users attaining formal employment was disproportionately skewed toward males, at 62% versus 38% for females. However, this also reflects the overall skew in the sample toward males (64 males versus 38 females), which is credited to a larger participation rate for males overall in training programs. The majority of jobs that were achieved by people with disabilities after completing ICT training can be divided into two broad categories: call center positions (8 out of 33) or jobs in the same technology centers where they received training (13 out of 33). Roughly half of those who secured formal jobs (17 out of 33) were working directly with computers.⁴¹

The high number of people in the sample who were working in technology centers after completing the course is an outcome of our sampling methodology — we began at the center and snowballed out to second-degree contacts or other graduates. Although this representation underlines a sampling issue, an important factor in community development is also captured here: individuals with disabilities were less likely to stay in contact with the center after

“For the simple fact that they arrive [at a job placement] with certification, they are immediately given a test of their computer knowledge and they are hired.”

— Ana Aguilar, Caracas, Venezuela,
Coordinator of Special Education
Department, Instituto Radiofónica
Fe y Alegría

“I [got a call center job] because I was in two jobs before. ... They see that I am attending here and all that, I put down the reference of POETA, on my resume.”

— Israel, 23, Quito, Ecuador,
person with motor impairment

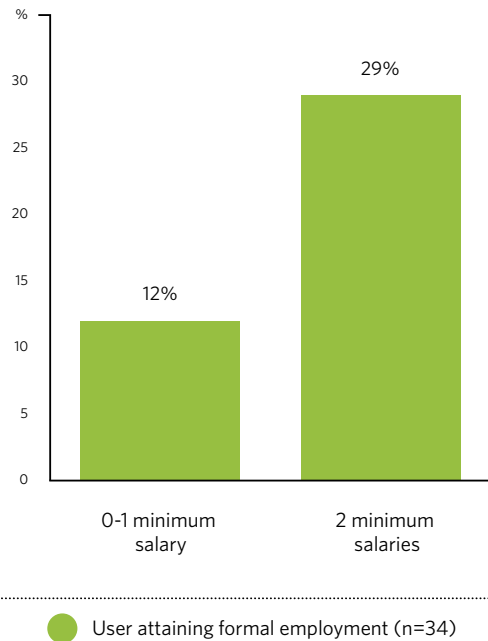
completing training, unless they were employed there. This was reflected in interviews with center managers and program administrators, who discussed difficulties in keeping in touch with graduates of the programs once they had completed the course. This was more of an issue for the sample of people with disabilities, possibly due to their geographic distribution throughout the urban area, versus youth who commonly reside within close proximity to the center.

Of the 13 individuals who obtained jobs at the technology centers, nine were at-risk youth and four were people with disabilities. In our interviews, we found that people with disabilities had comparatively more difficulty getting jobs at the centers where they received technology training, possibly because of a lower turnover of trainers among the more specialized teachers for persons with disabilities.

Somewhat unexpectedly, the data suggests that — in contrast to gender — neither education, nor previous experience with formal employment, nor even past computer knowledge showed any particular trends in differentiating outcomes in the formal job market. However, we found a slightly lower trend toward formal jobs among people from lower-income families.

⁴¹ This differs from others in the sample who had jobs in places where computers were used but were not using them in their own jobs.

Figure 3.5 Employment outcomes of lowest-earning individuals



The proportion of individuals from the poorest families who find formal-sector jobs is roughly half that of trainees from comparatively better-off families.

An important theme emerging from the interviews was the role of the “institution” of the technology center as a segue for people into formal employment. Several of the youth interviewed who had found formal-sector jobs benefited from a referral from a center or its sponsoring organization. We see further evidence of this in our discussion of policy issues — the training centers

become an important formal employment channel for job candidates for positions in organizations that are legally required to hire people with disabilities.

3.2.3 Increased self-esteem and confidence in employability

Past work on technology centers for marginalized populations has indicated self-esteem-related impacts for participants (Ferguson, 2003; Buré, 2008). In analyzing our data, we find that some of these results are relevant to both sample populations.

The self-esteem theme recurs in multiple ways, underlining the importance of increased self-esteem as a construct. We found three ways in which people discussed self-esteem: first, in terms of their own perception of low self-esteem; second, in terms of their perception of increased self-esteem after completing technology training classes; and third, in discussing what they perceived as the need for training or programs related to self-esteem within the overall technology center curriculum.

“[The course] shows the person what they can do with a computer...things that at another time they thought they wouldn’t be able to do, like work in a bank for example, they could do it if they know the programs JAWS and Excel, how to use a spreadsheet.”

— Rosaria, 33, Mexico City,
person with visual impairment

There were no direct questions related to self-esteem in any of our interviews, and responses on the topic usually occurred during conversations relating to perceptions of the impacts of the training course. As we see above in Figure 3.6a, a fairly considerable sample of respondents in both categories discussed increased self-esteem as an outcome of the program.⁴² In general, the perception of low self-esteem was comparatively higher among people with disabilities, as was the sense of increased self-esteem as an outcome. We attribute this difference to what many respondents qualified as a “quantum leap” in their self-perception of their ability to do things, as reflected in the quote from Rosaria, above.

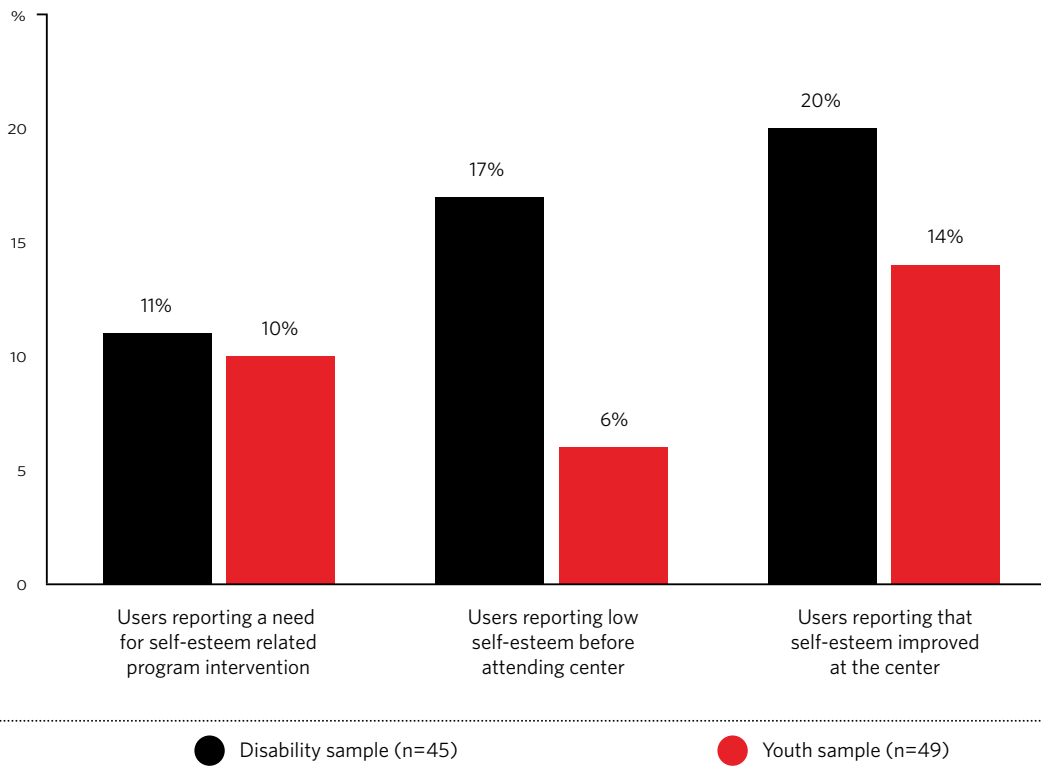
Interestingly, the youth and people with disabilities both noted the importance of including services structured around helping to “increase” the self-esteem of course attendees, at roughly the same

⁴² We acknowledge here the potential of bias in responses related to self-esteem impacts of the centers, especially with regard to first-order respondents contacted directly through technology centers.

“When I came here, I didn’t say anything, I was very shy. If you came here in January, I would say very little to you, here I already know what my goals are for my life, short and long term.”

— Milo, 16, Capão Redondo, Brazil

Figure 3.6a Perception of self-esteem, pre- and post-attendance at technology training



frequency. However, fewer youth cited having low self-esteem. We explain this in part because, while the issue of self-esteem was recognized more broadly as an issue for the entire community of people with disabilities, for youth, problems around self-esteem were less self-acknowledged, and were seen rather as “impacting others within my community.”

The increased self-esteem relates, in part, to the greater self-confidence in one’s employability and worth in the labor force — though the latter is also related to a “demystification” of the job market. For some respondents from both populations, working in what felt like a simulation of a workplace at the training center increased their confidence in being able to perform in a real-world work environment.

As in the case with the issue of self-esteem, we did not directly ask questions related to employability. It is interesting to see in Figure 3.6b exactly where the discussions of self-perception of one’s prospects in the job market emerged. For those graduates of technology

“[At the center we learn] that because you have a disability you don’t have to be on the side, in a corner like a piece of furniture. On the contrary, you struggle for your life, these classes are an incentive to get ahead, to believe in yourself, to feel capable, that you can do the things that you want, the goals that you make.”

— Jorge, 38, Quito, Ecuador,
person with motor impairment

Figure 3.6b Self-perception of own employability

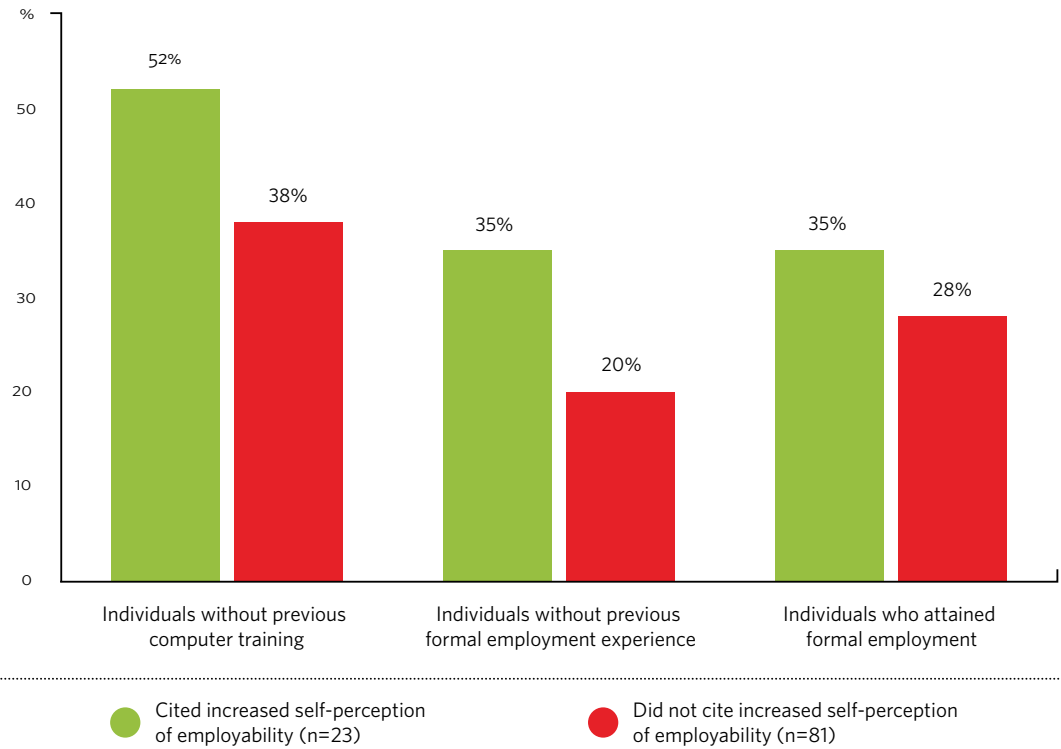
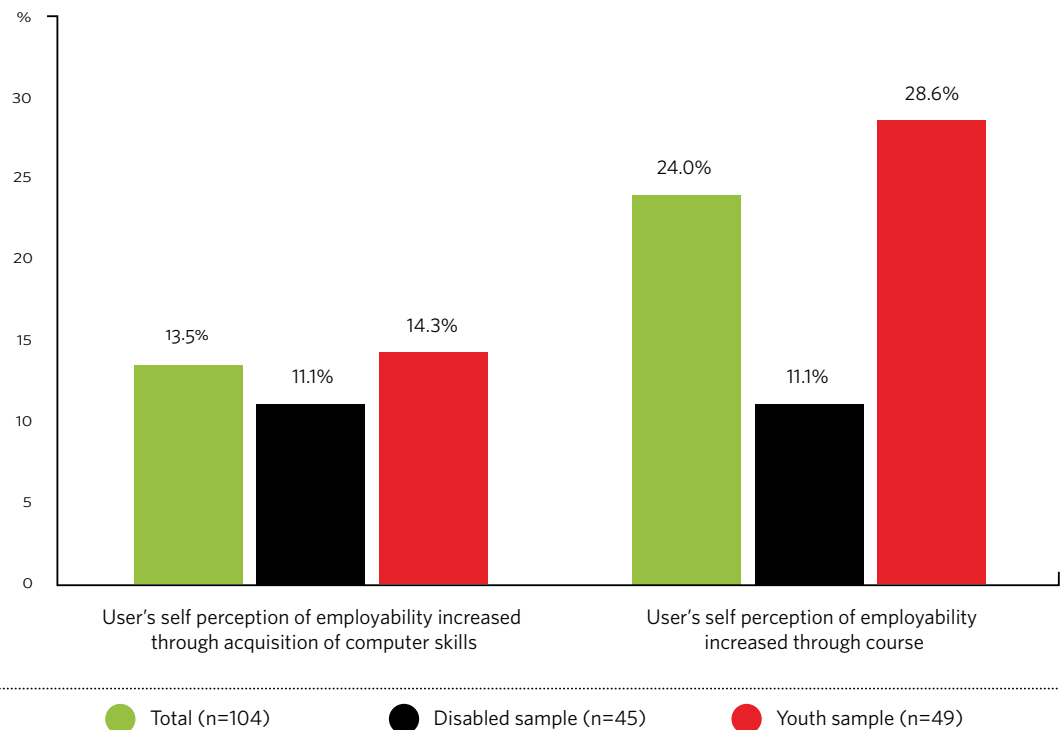


Figure 3.6c Self-perception of employability across different samples



training programs with comparatively weaker “standings” in the job market — such as those without former training in the use of computers, and those with no past formal (or informal) employment experience — we observed a comparatively greater sense of increased potential in the job market. While the sample is not large enough to definitively call this a trend, the general suggestion makes intuitive sense and is consistent with the discussions we had with administrators.

“I arrived here, with low spirits and self-esteem, really skinny — I was actually underweight. And here, with the services of professional nutritionist, with rehabilitation, with the injection of energy that everyone here gives you, the physical therapists downstairs. With this injection of energy my life has changed a lot.”

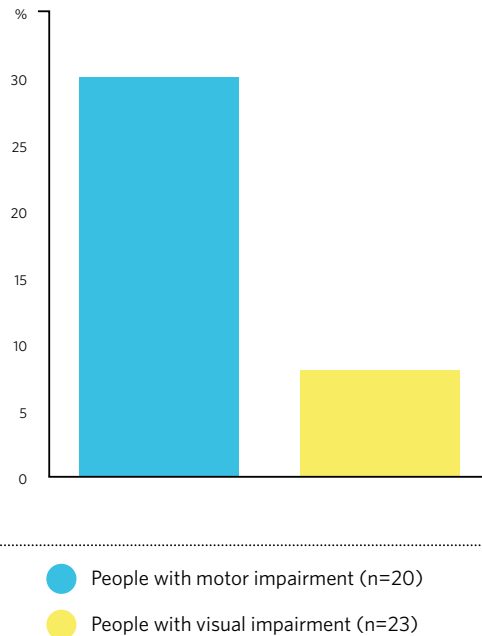
— Gregorio, 27, Caracas, Venezuela,
motor impairment (in a center with
integrated services)

In addressing these same questions with people with disabilities, we find an increased perception of one’s own employability emerging most strongly among people with motor disabilities. On one hand, this could be explained through the fact that people with motor disabilities in our sample had greater access to jobs in the general market, compared to people with visual disabilities.

3.2.4 Decreased stigma

Stigmatization is an important part of the condition of disability (Fine & Asch, 1988) and that of youth in low income areas (Moore, 1985). With youth, this is particularly true in the case of Latin America, where issues of urban violence and increased gang membership have exacerbated the stigmatization of low-income youth (Winton, 2007; Frix et al., 2009). For respondents with disabilities, problems cited included condescension by potential employers or the idea that they will be unable to competently fulfill assigned tasks. An example of this attitude is seen in Mexico, where training centers expressed the need for a recruitment professional to meet with potential employers periodically, in order to guarantee that people with disabilities hired through their center would be able to complete tasks assigned to them.

Figure 3.6d Increased perception of own employability



“Sometimes they respect me, but only if I am wearing a shirt from [the training center] or have my official badge. If I go to an official event, as a representative of [the training center], if I don’t have my official badge they will question me and not let me in. They don’t respect me. If they don’t see you nicely dressed with a tie on, you’re not worth anything. If they see me with a little earring in, they’ll think I’m just a bum kid. It’s horrible.”

— Javi, 16, San Salvador El Salvador,
program graduate, current
computer teacher

Figure 3.7a Perception of stigma among people with disabilities

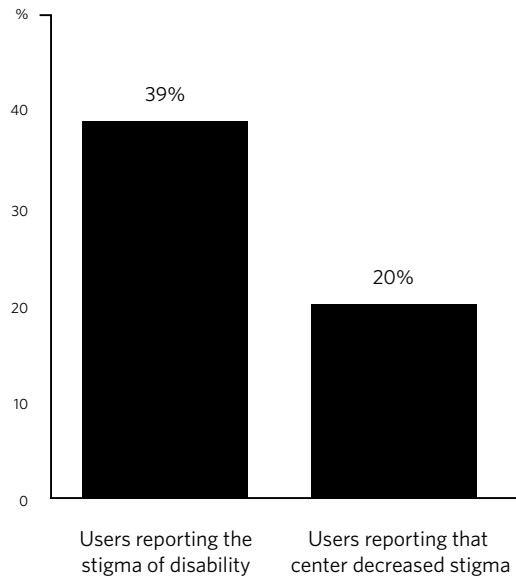
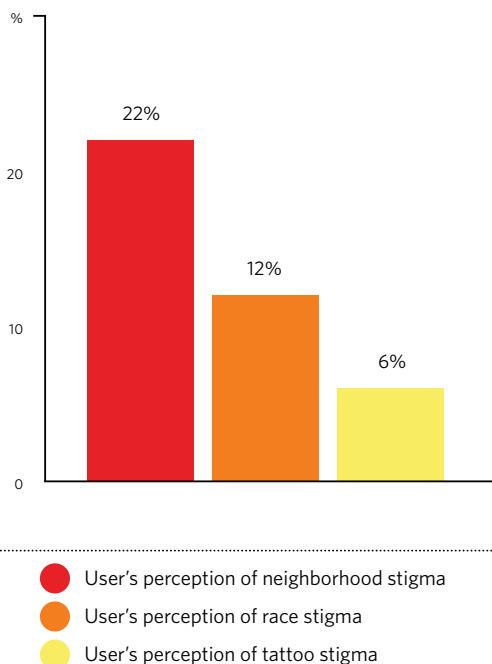


Figure 3.7b Perception of stigma among youth



Among our respondents, the idea of computer centers working toward reducing this stigma came up in two ways. For people with disabilities, enablement was central to reducing respondents' sense of stigma. In interviews, participation in the labor market emerged as a particularly important factor in this regard: it enhances the visibility of people with disabilities in new occupations, working against socially widespread stereotypes about the kinds of jobs open to people with disabilities.

As shown in Figure 3.7a, the perception of stigmatization of disability was a very important theme, with almost 40% of the respondents citing social stigma as something they experienced themselves or found prevalent in society. In Mexico, for instance, one of the interviewed organizations was particularly keen on reducing the number of visually impaired persons involved in sales of lottery tickets, since this was seen as reinforcing negative social stereotypes. Approximately a fifth of our sample felt that technology training could play a role in reducing the stigma of disability. Such expectations were largely based on the diversification of the labor market and acceptance in “regular” jobs. At a more microcosmic level, such a transition into “normalcy” was seen as beginning at the point when people with disabilities could perform the same tasks on computers as would be expected of users without disabilities.

“These youths don’t enter the malls in the city, Iguatemí — they don’t enter there. They know that there, they will be profiled, there will be some security guard after them. It’s hostility, the society that attacks them, they don’t want this kid, they want them to die.”

— João Paulo, Capão Redondo, Brazil, administrator at youth center

In contrast, for youth, the “de-stigmatization” was more an outcome of the affiliation with an institution of repute. The lack of institutional affiliation is usually related to their limited access to higher education and a consequent shortage of social networks for jobs (Reingold, 1999). For youngsters in low-income

neighborhoods of São Paulo and Guatemala City, where the bulk of our sample was located, young people frequently related to being judged on their clothing, their residential address, and physical characteristics such as facial tattoos, hair styles, and certain colors. As described in Figure 3.7b, self-perceptions of stigma were strongest with relation to one's neighborhood, a sentiment echoed in much recent research on low-income areas in Latin America (Cardoso et al., 2003). Thus, in discussing stigma, for many young people the association with the training center was seen as both favorable within their own neighborhoods and beneficial in serving as a first point of contact with potential employers.

3.2.5 Mismatched expectations

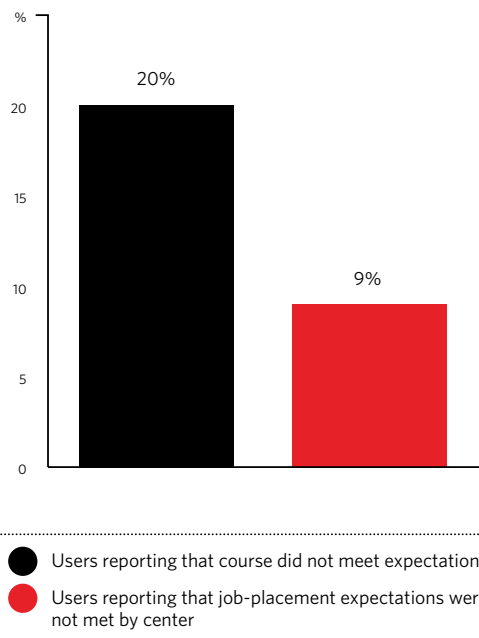
Several projects in the technology and development space present a potential mismatch of expectations between what a project offers in theory and how people perceive its usefulness or appropriate it into their community. This has been observed as a risk in several previous studies (Ferraz et al., 2004; Kuriyan & Toyama, 2006; Schwittay, 2008) and we found it to be a theme with several respondents within our sample as well. While past work has found a range of reasons for mismatched expectations, perhaps the single most important reason is the idea among users that graduation from technology training roughly corresponds to entry into a job.⁴³ As we see in the tables in Section 2.1, a majority of the training centers offer only very basic introductory courses in using computers. Thus, the idea that graduation implies a job “in computers” could be extremely misleading, and yet we see it frequently in our data, similar to expectations seen in other studies (Pal et al., 2009).

“It seems to me that these existing training programs, they try to fill these gaps that exist in the education [system] ... It seems to me that it's a quick course that they offer, that they provide a certificate, but effectively what will this serve?”

— Juliana, São Paulo, Brazil,
hiring manager, local employer

“When I took the training, it wasn't very broad, because we didn't have an internet connection, which is what is used most [now in my job]. We also lacked materials, for example a printer, scanner, fax, which is also what I

Figure 3.8 “Meeting expectations” across disabled users



intended to study. In fact it was very basic. Here at work, I have realized that they [the technology center] taught us very little.”

— Olivia, 29, Tlalnepantla, Mexico,
employed as administrative assistant

Figure 3.8 shows that a small percentage of the disabled users who completed the training were disappointed with the job search, even if they were satisfied with the jobs they got once they graduated. For most of those who were disappointed with the job search, the problem often stemmed from an expectation that the technology center itself would be able to coordinate and facilitate the interview and job-search process, though this was frequently not what center administrators or entrepreneurs thought of as within the purview of their role.

The level of training was of particular concern to several users. On one hand, many users who came into center had a limited idea of what computer training involved. In the case of first-time technology users and entrants into the formal job market, the challenge was to adequately understand how applicable the training would be in an actual work environment. In general, the level of dissatisfaction with the training itself was

⁴³ “Mismatched expectations” were coded in interviews as any statement implying the user was unsatisfied with the format of the classes, the quality of training, or eventual outcomes (such as job placements).

less prevalent among at-risk youth than among people with disabilities. This scenario was more pronounced in Ecuador, where we found cases of individuals placed in jobs citing a mismatched expectation of what they thought they would actually be doing. In other cases, respondents felt they were beginning a job without any real preparedness for the tasks they were recruited for, due to a legal requirement to employ people with disabilities that resulted in employers rushing to hire people with disabilities, regardless of their qualifications, in order to avoid economic sanctions. Others expressed the concern that being treated with sympathy, rather than equity, in the workplace also further polarized employees who have disabilities from those who do not. However, some respondents felt their positions were more secure, since they were aware that they would have to be replaced by someone with a disability if they were let go.

Center managers, like employers, were far more concerned about the certification process than participants, reflecting their own perception of the value of certification from their centers as well as their perception

“They should have inserted us in jobs like this with the full understanding that it is a call center, and that we are going to work, because it is very difficult, and maybe even if we do our best we are going to fail.”

— **Claudia, 42, Quito, Ecuador, person with visual impairment, recently employed in a call center**

“During the interview], I showed her all the [certification] documents I have and she said, ‘But these don’t really have much validity,’ as if they didn’t use them.”

— **Daniela, 31, Tlalnepantla, Mexico, person with motor impairment due to chronic illness**

of employers’ expectations of certification. Employers did in fact express some of these concerns, but not nearly as much as expected — not because they doubted the validity of the certification, but rather because their threshold for employing a candidate depended on a broader range of factors, of which the certification was frequently not the most important.

3.3 Program influences

In this section, we examine some of the key factors that influence the success or failure of ICT initiatives and computer training programs. Given much recent work on the factors that influence technology centers and access (Kuriyan & Toyama, 2007; Rothschild, 2008), we have found many parallels with our own findings. We briefly discuss some of the key areas of influence.

3.3.1 Cost

From the standpoint of economic sustainability, people’s willingness and ability to pay for ICT services (and technology in general) has been an important hurdle for technology centers around the world, including several that have had to close or greatly limit services because even the most nominal charges are sometimes seen as unaffordable (Best & Kumar, 2008). Although the issue of cost was raised anecdotally among both interviewees and administrators, we found no observable trend that users were unwilling to pay for technology services or connectivity. This primarily reflects the fact that we were not seeking information regarding users’ stated preferences in relation to technology services. A majority of the population surveyed had no functional access to technology outside of the technology center, and for them the center served both as a training venue and as a site for communications. For a small proportion of respondents with access to computers at home, technology training was the primary driver for attendance. This was especially true among people with disabilities, for whom centers commonly serve as both a knowledge hub and a community space. In the case of at-risk youth, while low costs or free services did play a role in attracting users, other structural factors often served as deterrents from choosing alternate “open market” options. For example, lack of access to safe and reliable transportation, as well as the cost of transportation, often encourages young people to remain within their neighborhood. This is particularly true in the case of urban Latin American centers.

“We have difficulty because our computers are old as well. So many times our informatics training workshops lose students, because outside in a lan house [cybercafe] you have games, they are much cooler than our computers, which take a long time to load ... [Because] for you to compete with the street, with the dynamics of the street, you have to offer things that are very cool. Due to this graffiti fits well, because it’s very cool, it’s very intense, alive, dynamic, colored. It’s something of an adrenaline rush. If you have some crappy computers, this doesn’t even attract us, not to even say the youths!”

— Graziela Bedoian, São Paulo, Brazil, psychologist and founder of Projeto Quixote (which also runs a graffiti program for youth)

Furthermore, past research on Latin American urban areas has proven that many youth may feel uncomfortable straying from their neighborhood due to prominent boundaries separating rival gangs and organized groups.

3.3.2 Technological reliability and sophistication

The reliability of the hardware and software at technology centers is an extremely important factor in ensuring return visits of participants. For much of the late 1990s, centers in low-income neighborhoods were often stocked with computers that were recycled, and early on this strategy was effective in sparking an interest in technology in these areas. However, as access to better “industry standard” computers became more ubiquitous throughout the market worldwide, studies showed that low-resource populations found it demeaning to be expected to use substandard technology simply because it was free or subsidized (Ferraz et al., 2004).

In our data, we found that the general reliability of the machines, as well as their ability to perform high-end computing tasks, were important factors in attracting clientele. For youth, graphics-heavy games were an important draw to technology centers, as were courses in graphic design, particularly using the latest technology from Apple. Technology centers in several parts of the world frequently focus their energy on providing “useful” technology — discouraging games, social networking, video streaming sites, and so on. However, functionally, it is extremely difficult to keep young people interested in places they do not perceive as “cool” or personally entertaining. For people with disabilities, functional versions of critical software were key in maintaining users as regular attendees. For example, in many centers we visited, visually impaired users had access only to a demo version of a JAWS screen reader that required them to restart the machine every 45 minutes — a disruptive function, particularly for someone completing a training course. In the case of ICT initiatives intended to serve people with disabilities, the reliability of the technology is particularly vital, and we examine this issue in greater detail in our discussion of accessible technology.

3.3.3 Integrated employment services

A consistent demand from respondents graduating from technology training courses concerned the need for broader employment services from training centers. Given the large number of respondents who were recent entrants into the formal employment sector, they often lacked training on a range of issues, including interviewing, resume-building, job searching, and accepted behavior in a formal work environment.

We classify the trends on employment services into two meta categories: training issues, including some of the interview and resume services mentioned above; and facilitation issues, including networks to potential employers and actual placements. We discuss some of the network-related issues in Section 3.1.3, concluding that it is particularly important that training centers themselves foster strong relationships with employers.

Some of the organizations surveyed offered specific courses, such as POETA’s *Preparación para el Mundo de Trabajo* (Preparation for the World of Work), which offered resume-building, interview-training, and job-searching skills. Such services were found, anecdotally, to support an increased self-perception of employability. In Section 3.2.3d (under “self-esteem”), we identify this

“We have a good relationship with Oxigênio...we'll give much more attention to them, someone who came from Oxigênio.”

— **Augusto, Guarulhos, Brazil,**
airport human resources manager

as a contributing factor in the significantly higher self-perceptions of employability among youth versus people with disabilities. Through interviews, we found that this is most likely due to people with disabilities having comparatively less knowledge of the formal job sector and the processes involved in obtaining a job. In fact, training in interview skills and job-searching techniques were considered revelatory by youngsters, who frequently referred to the training as an introduction to a new world outside of their familiar geographical landscapes.

“I could have three college degrees and ten technical courses, but if I sit down at the table and speak with slang I don't believe that I'll be chosen for the job due to this.”

— *Paulo Eduardo, 16, Guarulhos, Brazil*

“[At Oxigênio] the teacher taught her how to dress to look for jobs, not to use high heels, these things, taught how to make a resume. And that's how she learned how to get a job.”

— *Angelica, 15, Guarulhos, Brazil*

Databases of resumes are not a common feature of most organizations, and it is generally difficult for potential employers to have an accurate idea of students' expertise except through referral. Some training centers, such as *Vida Independiente*, *Grupo Ceiba*, *Comite Pro-Ciegos*, *Projecto Quixote*, and *Ágora*, were relatively successful in placing a large share of graduates in jobs — but their success was commonly due to strong personal networks, between members of the organizations and major employers.

In the case of people with disabilities, we found that several centers saw an additional need to build relationships with employers and to serve as guarantors for

their graduates' work. While viewed as belittling by some, other people with disabilities considered such relationships with employers as necessary in order to give people with disabilities much-needed access to public space and the formal labor market. Such perceptions of disabilities are present throughout the world, where disability is still predominantly viewed through the medical model, as opposed to the social or rights-based models. For employers who were new to hiring people with disabilities, follow-up services provided by the organization were seen as significantly increasing the confidence that potential employees could successfully fulfill the requirements of a particular position.

For example, the excerpt below presents one center's approach to networking with potential employers.

“When we go to a company, we do a presentation...we explain to the company about our programs, we actually show them how they work because that's quite an important part because they always wonder how a blind person is actually able to use a computer. ...[W]e also ask that they allow us to see the platform that they use in their business and after we have the basic idea of how they work and how their technical system works, we come back here and create a simulation. ...[O]nce we have designed a simulation we invite them here, to sit down with our students and watch how they are able to manage and use the program.... Then we go to the company, we install the program, we fit the program to work as best as we can with the company, then we stay a few days with them too, watching how they work as well as explaining to them how it works. If they have any doubts we are there to explain it to them and look for a response. The longest we have had to stay is just a few days so that they can adapt to working and using the program.”

— *Guillermo, Guatemala City, computer instructor for visually impaired users*

The lack of a developed labor market infrastructure creates a need for a range of support factors for individuals' entry into the job market. Employers also require certain types of documentation from new hires, including background checks and certification, which are expected to be facilitated by the centers. Indeed, it could be argued that offering these services essentially means that each center must become an extremely resource-intensive

and individualized employment agency. Unfortunately, a majority of centers did not even have sufficient time or human resources to regularly post basic job postings.

3.3.4 Human development services

Most people served by technology centers are excluded from the formal labor market and face multiple forms of social and economic discrimination in their daily lives. Some centers serving people with disabilities offer additional services to complement ICT training, such as occupational therapy, physical and rehabilitative therapy, psychological services, and cultural programs. Much scholarly research supports the use of therapy to provide better services to people with acquired disabilities, as well as to at-risk youth. We found that these were generally seen as effective by both program administrators and users.

Beyond training and therapy, respondents spoke positively of social activities offered by technology centers. In general, these were centers that had longer histories within neighborhoods or more experience providing services to specific communities, so they could effectively arrange social and cultural events for their members.

“The choir has been very gratifying because it was a new experience. I never imagined that I would be in a choir, give concerts. We did a recital in December for Christmas... And in rehearsals you deal with a lot of stress through singing, and learning new things. I enjoy it.”

— Edison, 26, Caracas, Venezuela,
person with motor impairment

Such activities were effective in creating a greater sense of community among the regular center users, as discussed in Section 3.2. The creation of community can also be effective in strengthening relationships with local employers and thus increasing program graduates’ probability of successfully finding employment.

“[Compared to] other places where I have done rehabilitation, [the Foundation] is very distinct. There [at the National Rehabilitation Center] the environment is very medical, and this medical side doesn’t open the sensitive or human part, simply the scientific part that they are looking at the person with the disability. It is a scientific way to study the injury and to

see what possibilities the injury has. Here it is more the human side. Where you yourself, me, in my position as disabled, I see that there are other disabled people who are working, who have possibilities, and why can’t I have those? In National Rehabilitation Center you don’t see that, you see lots of white coats. There is no human part like there is in the Foundation.”

— Gregorio, 27, Caracas, Venezuela,
person with motor impairment

3.3.5 Certification

As briefly discussed in Section 3.2 (“mismatched expectations”), the certificate itself is often viewed as an important artifact. Accordingly, we found that center

“[It is important for] any person with a visual impairment or any disabled person in general, discover their own self worth and elevate their self-esteem. That they can do what they want and that is how a psychologist could help a disabled person. That they are just as valuable as any other person without a disability. This is what is needed in terms of the overall education that that person has.”

— Efraín, 55, Quito, Ecuador,
person with visual impairment

“It’s one thing to learn how to use the computer, and it’s another to learn how to leave your house. That’s why independence is so important for us. That is one of the most fundamental steps for someone with a disability.”

— Jose, 26, Guatemala City,
current Braille transcriber at rehabilitation center for the visually impaired

administrators saw the certification process as a way to draw prospective program beneficiaries, as well as potential employers. We found variation in the value of specific certificates — both beneficiaries and employers varied in their perceptions of certificates as either important or representative of one’s actual technical abilities. For users, their value was indeed tied closely to their perceived relevance in the local job market. For example, in Guatemala, we found that a general technology center certificate was not valued as much as a certificate from a specific government agency.

“I went to study at Intecap [public vocational training program] but it was just to get my [formal] diploma. I went there not to learn the skills — which I got at the center — but just to get my piece of paper ... because here in Guatemala there is a classic understanding that certificates [at small private institutions] are sort of just handed out.”

— Maco, 25, Guatemala City,
former beneficiary

The certification from the Guatemalan Public Education Ministry was viewed as most important and useful, especially because a large number of program participants were interested in state jobs that require this particular certification. In Brazil, however, certification from the technology center was seen to carry much more weight,

“To get here I have to get myself around on the bus and then from the bus stop I have to wheel myself for about 10 minutes. But it is very difficult because I have to ride in the street by the cars because I cannot use the sidewalk since there are no ramps that my wheelchair goes over. So there are times that I might be able to get up onto a sidewalk but I will not be able to get down.”

— Beatriz, Quito, Ecuador,
person with motor impairment

Figure 3.9 Accessible bus entrance in Quito, Ecuador



Michèle Frix

although backing from a major private organization made it more valuable. Consequently, program administrators in Brazil were concerned with obtaining private certification from brand names such as Microsoft or Cisco, since the community technology centers saw themselves as competing with private, market-based computer training centers. At-risk youth accorded certification much more value than did people with disabilities, probably reflecting the limited opportunities for higher education for young people in low-income neighborhoods (see Section 1.5). As a result, for many first time job-seekers, technology center certification serves as the only additional qualification they are able to present to potential employers other than a formal school diploma (if available). For Brazilian employers who hire from low-income neighborhoods, we observed that certification was in fact somewhat important. Program administrators, however, valued certification much more than employers. Employers were more concerned with either broader institutional records from schools, or with records of issues related to behavioral concerns.

3.3.6 Accessibility

Physical access to technology training centers has been seen as an important planning factor across disabled and non-disabled populations (Stoll, 2005; Madon, 2005). We did not find the issue of physical access to be a major concern for at-risk youth, but it was clearly an issue for people with disabilities.

Due to a lack of computing facilities for people with disabilities in general, most users attending the centers surveyed in this study had no alternate places to access technology or the internet. We found that

more than three of four persons with disabilities in our sample had to travel more than 30 minutes to get to a center. Users stated this was due to the lack of sidewalks accessible for wheelchairs, or for the blind. This was further complicated by urban crime, which in some cases put people with disabilities at risk of being attacked or robbed. Some respondents reported being robbed during their commute to the center.

As we see in Figure 3.9, accessibility provisions on public transportation do exist, but they are not practical because of crowding in buses or a lack of infrastructure such as ramps for wheelchairs. Some organizations, such as FUNDAPROCURA in Venezuela, were able to provide transportation for attendees, whereas others managed creatively, initiating transportation relationships with government agencies such as UPNo41 in Mexico (*Universidad Pedagógica Nacional, San Francisco de Campeche*).

3.3.7 Functional accessible technology

We found that accessible software and hardware made an extremely important difference in the ability of people to participate socially and economically in Mexico, Ecuador, Guatemala, and Venezuela, where we conducted research with people with disabilities. Some issues emerged as important for further investigation in order to better provide quality accessible technology.

AVAILABILITY

The prohibitive cost of much software for people with disabilities was found to be the biggest barrier for functional access to technology in the countries researched. This could indeed be a defining agenda for research and practice in technology for the developing world, as new tools are developed either within institutional settings or by independent actors with a social interest in issues of disability. Although a number of organizations were offering subsidized versions of software, both for general operation as well as for specific accessibility functions, such a model is unsustainable.

The question of availability is complicated by the distinction between training availability, at the center or training location, and job-use availability. Accessible software and hardware were sometimes made available to centers by parent organizations, like POETA, but the same cannot necessarily be expected at places of employment. For people using vision software, such as JAWS, this could be a huge issue, especially since

official versions of such software are very expensive. In countries like Ecuador and Venezuela, with mandatory employment requirements for companies to increase the hiring of people with disabilities, this issue is further complicated by the fact that these laws do not have enforceable requirements for specific technological tools needed to make a workplace functional — a typical example is the lack of widespread access to screen-readers. Voice-recognition software was almost never used, even if available.

“JAWS costs around 15000 pesos [\$1000] on average. ... There is a free version in Spanish, we can download it on the website of ONCE. It is a demo version that works for 34 minutes [thereafter you need to restart the machine to make it work again].”

— **Alonzo, Mexico City,**
visually impaired computer instructor

“When we need to use the internet, we have to come here. Because in other internet cafes, usually all the computers are occupied and more than anything, it is very rare to find an internet café where they will let us use JAWS. So our only medium is this center.”

— **Tania, Guatemala City,**
person with visual impairment

“[The government could best serve people with disabilities by] putting the speaking system, JAWS, in business. Because practically no companies use it. They always say the same thing: ‘It’s that we don’t have the system you need.’ — which is JAWS. It’s always the same. That’s why there are more jobs for motor disability, than for visual disability.”

— **Maria de la Luz, 24, Mexico City,**
person with visual impairment

“We have some pieces of technology and apparatuses that people with disabilities could use to more easily operate a computer but we don’t use them to teach because we know it’s unlikely that any employer would purchase these types of technology.”

— Francisco, Mixco, Guatemala, computer teacher in rehabilitation hospital for people with motor impairments

For hardware, we also found that tools such as accessible mice or keyboards were frequently unused or not encouraged by center managers because the same tools were often unavailable in real-world work scenarios. As a result, at some centers we visited there were donated state-of-the-art accessible mice locked away in cupboards. For tactile devices such donations were not the norm, and a number of organizations relied on locally-improvised tools such as those seen in Figure 3.10a, at a center in Mexico City.

Availability of wheelchairs was a major issue for respondents with motor disabilities. In Mexico, *Vida Independiente*, one of the organizations we worked with, identified increased access to active wheelchairs as one of its primary goals for members. FUNDA-PROCURA in Venezuela, recognizing this as an immediate need, bundled services by providing wheelchairs along with free or subsidized wheelchair repair, and additionally providing technology training services to some of the same customers.

“I was looking for a wheelchair and I came here and they gave me a wheelchair, [and] I did rehabilitation ...the next week I did rehabilitation, and then I started a course in micro-enterprise...then they gave me credit to start a store, and after that I started the computer course...I came for a chair and it turned out that I left with more than a chair.”

— Juan Francisco, 35, Caracas, Venezuela, person with motor impairment

Figure 3.10a Improvised computer tools in Mexico City



Phil Neff

A related issue was the availability of teaching staff. A number of centers cited difficulty in getting appropriately trained staff to teach accessible software and hardware; and for some domains, such as sign-language translation, there were practically no expert trainers.

COMPATIBILITY

Much recent literature on machine efficiency in the developing world has focused on the high incidence of pirated software or viruses and spyware infections (Casmir & Yngström, 2003; Maswera, Edwards, & Dawson, 2009). While many organizations had institutional partnerships that allowed for non-pirated versions of some software and operating systems, we found that there was still significant incidence of pirated software, virus infections, and computers with inadequate hardware for the systems they were running.

Problems with screen-reader software were much discussed by respondents with disabilities. Faulty or inadequate versions of screen readers (because access is often limited to demo versions) were a common problem. We also learned that there are issues surrounding the release of new versions of operating systems for people with disabilities. For instance, the installation and use of screen-readers in the operating system transition from Windows XP to Vista was cited frequently as a problem by teachers and users alike.⁴⁴

“They inserted me in this [call center job], but it is turning out to be very difficult for me because...JAWS doesn’t enter the Orion program that this company uses. It enters Excel but it doesn’t read Orion...[It] depends on my boss to tell me if I can stay with Excel. The engineer from [the job-placement NGO] went to install JAWS at the company, but that did not work. The company said that it was going to contact [the job-placement NGO] to try to help me, but until now I don’t know what has happened, they haven’t told me anything.”

— Claudia, 42, Quito, Ecuador,
person with visual impairment
recently employed in a call center

“For the past two years we had been working with Magnus, which is a very, very good magnifying program, but we recently had to switch to Zoom Text because it is compatible with Windows Vista. Programs like these...there aren’t many on the market. There are very few companies that develop software such as these that work with the idea of disabilities. And JAWS is one that is very complex. We receive this software as a donation, a donation managed by Microsoft and the OAS [Organization of American States]. So it’s because of this that we work with JAWS because it is one of the most complex but also because it is easily adaptable to Windows.”

— Guillermo, Guatemala City,
computer instructor for visually impaired users

Another issue was the incompatibility between packages that trainees had learned to use with those actually used at their places of work. Finally, there is the issue of standards and of web accessibility requirements. Although there has been much progress on web accessibility

Figure 3.10b Example of JAWS fail case: “### due to column resizing is unreadable”

Date	Category	Expense	Amount	Amount (\$US)
03/08/09	Transportatio	Taxi	300.00	
03/26/09	Research	Phone card	100.00	
03/27/09	Research	Vida Independiente	###	175.85
03/27/09	Transportatio	ADO Mexico	956.00	67.25
03/29/09	Transportatio	Taxi	50.00	
03/29/09	Lodging	Campeche hostel	946.00	67.57
03/30/09	Transportatio	ADO GL Mexico	###	79.82
04/11/09	Transportatio	Taxi	240.00	
04/12/09	Lodging	Payment in lieu of	356.00	27.19
04/13/09	Lodging	Payment in lieu of	600.00	45.83
			###	463.51

44 The specifics of the problems were not discussed, but issues mainly concerned navigation of menus.

“JAWS is the only thing that allows us to involve ourselves in more information. Many businesses... have put their web pages on the internet, but we can’t open them... What I would like would be if there was a way that JAWS could be more descriptive about the information... JAWS is limited... It tells me that it can’t help me because there is no text on the screen. So if JAWS could say, ‘It is a red object, 10 centimeters...’ If it could be more specific. In some cases, there are some elements in PowerPoint that JAWS can describe for us. For some drawings it says, ‘flower-shaped object’ or ‘triangle-shaped object’ — I know what object I am using. That would be my suggestion.”

— Juan Carlos, 54, Mexico City,
entrepreneur and person with
visual impairment

in the developed world — especially in the United States where Section 508 of the Rehabilitation Act requires Federal agencies (or organizations receiving federal funds) to make their electronic and information technology accessible to people with disabilities — the same is not true for sites originating in Latin America.⁴⁵ This is potentially another issue for governments to consider from a policy standpoint.

3.3.8 Funding

The issue of external funding of technology centers and its consequences for economic sustainability has been a subject of significant academic debate since the early years of investment in ICTD. Although centers operating in low-income neighborhoods for at-risk youth, such as those studied in Brazil and Guatemala, may be expected to pay for themselves, this may not be a reasonable expectation for centers serving people with disabilities. In this research, we found that many of the centers surveyed, including the ones funded by POETA, received short-term funding on one to three year cycles. After this, centers are typically expected to be economically self-sustaining.

“The way things are projected right now, today, it would be impossible for us to fund this POETA center anymore unless we were to find an outside way to raise funds or charge for the course.”

— POETA center manager

However, the evidence indicates that despite some potential willingness to pay such centers can rarely expect to make enough profit from their clients to keep providing services. Funding also typically tends to be for asset purchases, such as computers or software licenses, and rarely for operating expenses that will be required to maintain both hardware and software. This may be due the constraints under which

funders operate (due to broader giving policies). We found no reliable evidence, however, that technology training centers serving people with disabilities — a low-income population — will be able to sustain for themselves if they are entirely market-based.

“Yes it’s helpful that the government has begun helping people with disabilities. There wasn’t much support before this. And people with disabilities should take advantage of this time because there are more job opportunities and opportunities like this free computer course and one never knows when the program Ecuador Sin Barreras’s funding will be cut, by the next government for example, and these opportunities won’t exist.”

— Cristobal, Quito, Ecuador,
Computing with JAWS course instructor
and person with visual impairment

“...recently there was the Misión San Gregorio Hernandez that President Chavez did...they did a census of all the people with disabilities in the sector, they called them and in many cases they gave them some kind of help: cushions, clinical beds, a chair for bathing, cushions like this one, but that’s the only kind of help that I have got. I have many friends who are still waiting to be called, and I haven’t gone to the trouble to going to the government office, because I’ll just lose time.”

— Edison, 26, Caracas, Venezuela,
person with motor impairment,

This raises larger questions of where the responsibility for service provision lies. Corporate social responsibility initiatives were either the primary or even the sole funders of some of the groups studied. This puts these organizations at risk of losing funding in the short- or medium-term, making a range of training services unavailable or inaccessible for people with disabilities. From a disability-rights perspective, such a scenario is unacceptable. Our findings indicate an urgent need for a politically independent rights-based movement, and for greater state responsibility for accessibility funding.

⁴⁵ Learn more at <http://www.section508.gov/>.

Chapter 4

Recommendations



Chapter 4

Recommendations

In this chapter, we note briefly some of the ICT training best practices we identified over the course of our research, both from the perspective of a funding agency as well as from the administration and organization of a training center.

4.1 Center funding: people with disabilities

While technology centers targeting at-risk youth may be expected to pay for themselves, this is not the case for centers serving people with disabilities. Stable funding is a critical part of the centers' ability to provide ongoing, high-quality services. Long-term funding is required, as intermittent funding can force organizations to make compromises that reduce program quality or stray from their core mission. Historically, most centers were funded with the intent of covering initial technical setup costs, through in-kind donation of licenses and equipment. However, it was observed that many centers were unable to become self-sufficient after one to two years (as stipulated by POETA, the funding organization). As a result, centers either closed, minimized services, or began charging fees — despite the community's inability to pay. Funding should go beyond “parachuting-in” technology — it should support the longer-term needs of centers in low-resource environments. We found that centers' reliance on local funding is not always viable. At many sites, program administrators explained that private-sector cooperation was not forthcoming, while government funding was volatile and at times dependent on political affiliations. From the corporate social responsibility perspective, there is no easy answer: the short-term funding and evaluation approach, increasingly embedded in the emerging paradigm of giving, seems at odds with the kinds of investment needed to effectively support human development initiatives such as these. Some of the larger issues behind the responsibility of funding and creating broader access are discussed in Section 3.3.8.

4.2 Connecting with formal education: at-risk youth

Considering that many ICT initiatives serve as a substitute for formal education, it is critical that centers serving at-risk youth also support cross-over programs to promote and support continuation or completion of formal education. From a beneficiary's perspective, connections with recognized educational institutions can be crucial — high school diplomas are a requirement for applicants in many formal jobs — especially in a context of high dropout rates and inaccessible or low-quality public education. As discussed in Section 3.1.2, centers can stimulate students to either complete or seek out higher education. By focusing on promoting ICT as a tool to support general literacy and educational activities, rather than solely e-literacy, centers could potentially broaden the impact of their programs.

4.3 Employment services

Since many vocational and ICT training programs focus on increasing beneficiaries' employability, many programs work toward fostering strong relationships with potential employers. Program administrators in those centers with the highest rates of success in placing graduates in jobs reiterated the importance of these relationships. However, many centers did not have the resources to create and sustain them. Where available, technology center staff and associations — especially at a regional or national level — should leverage their institutional and corporate connections to help centers develop their network. For example, some centers brought employers

to their site to interview and hire course attendees, while others have developed exclusive contracts with employers to provide candidates and guarantee their success by providing ongoing support. Centers with job-placement services can build a reputation as a source of high-quality candidates. It would also be beneficial for centers to align with existing job placement and internship programs, both public and private, in order to broaden the opportunities for program graduates and provide a direct link to jobs upon course completion.

For both youth and people with disabilities, the first experience in formal employment can be a harsh transition. Job-transition services by trained social workers or peer mediators ease this process by providing both technical and social support — such as additional on-the-job training or adaptation of the workplace for users of assistive technologies — and by counseling individuals in coping with the social and disciplinary realities of the work environment. From the perspective of both employers and co-workers, job-transition support also serves as a guarantee of the program graduate's ability to integrate into the workplace. Sensitivity training for employers and co-workers is also helpful in reducing stigma or prejudices that new employees may face.

4.4 Entrepreneurship

Although the creation of entrepreneurship opportunities was touted as a benefit of ICT training centers, little concrete impact was seen due to low-income participants' need for seed capital, training, and institutional support for entrepreneurial projects, which few centers had the capacity to provide. Further research is needed to investigate the viability of formal micro-entrepreneurship ventures in the long run. In other cases it was not clear what role ICT training might play in micro-entrepreneurship ventures — for example, selling food informally on the street. If entrepreneurship is to seriously become part of the livelihood-creation function of community technology centers, we need to move beyond the broad discourse on social enterprise to actionable training and credit facilitation.

4.5 Community involvement: disability

In recognition of the core philosophy of the global disability rights movement — “Nothing About Us Without Us” — ICT initiatives intended to benefit people with

disabilities should consult and partner with local organizations led by people with disabilities in order to respond to needs identified and expressed by the disability community itself. Programs should be prepared to recognize the diverse needs related to different experiences of impairment. A one-size-fits-all approach is inappropriate in all contexts, as specialized training and technology may be necessary to provide effective services. For example, course instructors teaching computing using screen reader software must be highly experienced, and native users may be able to provide more precise training. Increased funding for sign language interpretation and training is needed in order to remedy the exclusion of the deaf and hearing impaired in technology training centers, as well as more partnerships with organizations already serving sign-language users.

Many disability movement leaders, as well as course beneficiaries, felt that it was crucial to employ people with disabilities in *management* roles — not only as instructors or program administrators. Considering that these initiatives promote the employment of people with disabilities, it is appropriate that they also support their employment in positions of organizational authority. Program beneficiaries consistently referred to such examples as motivational role models, and many graduates aspired to become computer course instructors themselves in some capacity.

4.6 Community involvement: youth

In both Brazil and Guatemala, our research suggests that on quality-of-life issues for youth in urban low-income neighborhoods, we are at a critical juncture that calls for changes in both policy and practice. There is an urgent need to recognize and address the discourse of criminality surrounding young people. In addition to providing ICT training for youth, it is crucial that organizations also support public-policy initiatives that lobby for initiatives designed to break down racial stigmas and discrimination based on neighborhood or geographic location. Due to a lack of legitimate economic opportunities for youth, programs can work toward recontextualizing “illicit” activities — such as encouraging graffiti artists to study graphic design or illustration — thus developing productive, creative outlets for young people. Programs targeting at-risk youth should support both prevention and rehabilitation for those involved in criminal activities, emerging from imprisonment, and at risk of becoming the targets of gang violence or crime.

4.7 Program choices and certification

Several specific program design options stood out as particularly influential in a center's ability to adequately train users and support their employment aspirations. Certification documents must be relevant to local labor market requirements and valued by employers. Certification needs may vary among jobs, and the value of certification is dependent on the reputation of the certifying institution, whether it is a local organization, governmental body, non-governmental funding organization, or corporate sponsor such as Microsoft. In the case of both youth and people with disabilities, it was observed that reincorporating program graduates as professional or volunteer peer mediators and instructors contributed in several ways: providing a greater sense of community, giving program graduates opportunities to give back to the center in a position of responsibility, and providing current students with positive role models who are able to relate personally to their experiences and reality.

Considering beneficiaries' diverse needs (social, economic, mental, familial, etc.), it was observed that their overall experience with centers was more positive when services offered were not limited to ICT training. Therefore, it is suggested that ICT programs partner with organizations that provide broader human development opportunities, such as creative activities involving sports, music, and the arts, as well as psychological support and counseling. Users also frequently expressed their desire for more in-depth training in basic curriculum components, such as Microsoft Office and the internet, as well as advanced and job-specific training in computer maintenance, networking, graphic and web design, customer service, and foreign languages, primarily English.

Users also frequently mentioned the lack of transportation as a barrier to attending center activities. The cost and inaccessibility of transportation create a high barrier to program attendance. Providing transportation services or subsidies for users may allow the more vulnerable people within these populations to benefit from a variety of programs. While young people may live geographically close to centers, it is important to note that people with disabilities were commonly dispersed throughout the urban area — and some spent up to three hours commuting to centers (see Section 3.3.6). Employers also mentioned that they considered a potential employee's commute time

during the hiring process and were concerned when they were aware that someone required a lengthy commute, or (in the case of people with disabilities) could not reach the workplace without assistance.

4.8 Assistive technologies

In Section 3.3.7, we discuss findings related to the quality of assistive technologies. Respondents with disabilities frequently commented, and we observed, that there was in general a lack of low-cost assistive technologies in Latin America. Furthermore, software was not always available in Spanish. Improving access to and adoption of assistive technologies requires more support for course instructors and participants, as well as increased investments in training and the development of language-appropriate software.

It is also recommended that center staff receive training to support the creation of low-cost, individualized assistive technology solutions using locally available resources. Do-it-yourself assistive technologies can provide users with affordable and adaptable solutions to common accessibility barriers. Due to the limited availability of such technologies, we recommend funding initiatives to promote both the development of free or low-cost assistive technology and the implementation of universal design principles in product development.



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