Social Innovation in Practice

The Case of the Fe y Alegría Project for Educational Inclusion of Children with Disabilities in Ecuador

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Abstract[*]

Based on the experience of the Inter-American Development Bank's I-Lab with a technology-based project for the inclusion of children with disabilities in a poor neighborhood in Ecuador, this paper discusses the need to involve the final beneficiaries in innovation processes aimed at promoting social impact—that is, *social innovation*. Through intensive fieldwork with children with disabilities, impressive results were obtained and measured, yielding critical answers to the question of what critical elements are needed for technology to be effective when addressing social issues.

Introduction

This paper discusses the experience of the Innovation Lab (I-Lab)—developed by the Competitiveness and Innovation Division of the Inter-American Development Bank (IDB)—in a three-year project implemented in partnership with Fe y Alegría (FA), a Jesuit nongovernmental organization in Ecuador.[1] The project helped to boost the educational achievement of more than 230 children with disabilities in one of the poorest neighborhoods of one of the roughest cities in Ecuador.

It was, as anyone would have expected it to be, an experience fraught with sizeable difficulties: from the extreme socioeconomic situation of children (with or without disabilities) living in poverty, absentee parents, and stigmatization; to the lack of educational resources for children with disabilities; to the silence to which the deaf children were condemned, since virtually nobody in their environment knew sign language. Although this was a technology-based project, most of the challenges—and lessons—came not from the scarcity of technological resources but from the conditions of the community that had to receive them, use them, and make them their own.

There was, however, one concern that came from the core of the project: a truly valuable experience needed to be an evaluated experience, where impact could be appreciated beyond the intuitive idea that we were doing something good. There is a lack of economic literature with hard evidence about the impact of technology-based programs on children with disabilities. Thus, little has been written on methodologies suitable for measuring and obtaining that evidence. Precise evaluation is the basis for asserting success—and therefore replicating the initiative—observing failure, and correcting it, or controlling costs.

Through tackling both issues, this project is a testament to the notion that the intense involvement of the beneficiaries is the key element to the success of innovation-based solutions when addressing social issues. In these matters, effective innovation is *social innovation*.

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[1] For more information, see www.feyalegria.org.ec.

Social Innovation: An Operational Definition

Over the past few years, the realm of technology has expanded in a manner that touches individual lives more than ever before. Most of the myriad inventions that are emerging are meant to make everyday life more comfortable for the average person. The pace at which technology has expanded into our homes has made us think that such expansion was paralleled in other parts of the world; that is, with the proper resources, technology could provide answers to those who suffered from ailments or difficulties that appeared to be insurmountable.

However, the advance of technology has not been echoed by a parallel betterment in the lives of excluded people. Developing countries can provide numerous examples of seemingly perfect equipment that ended up being scarcely useful or a waste of resources (see Hopenhayn, 2010). Similarly, the socioeconomic literature is full of anecdotes about technology and innovation being used for welfare, but few of those experiences are supported by hard data, have proved sustainable in the long term, or may be replicable (Hanna, Duflo, and Greenstone, 2012).

The question of effectiveness of technology for addressing social issues remains quite open, as there are still many hurdles that prevent technology and innovation from being relevant tools for finding cost-effective, long-lasting solutions. This is where social innovation comes in. Although this notion is not recent, the term "social innovation" has suddenly become a buzzword that appears in political speeches, conferences, papers, and journals. Yet it seems that those who resort to the term most often—policymakers, researchers, government innovation agencies, and entrepreneurs—are not in full agreement as to what it encompasses.

The I-Lab's vision and experience is that introducing innovation into certain social issues—mainly those that affect people at the base of the income pyramid—need to be tackled with the involvement of the affected group—that is, using a bottom-up instead of a top-down approach. Beyond simply providing goods or capital, as is usually done, social innovation calls for intervening in different layers, so as to address the various aspects that usually comprise a social problem. This especially means involving the beneficiaries in the design and implementation of each layer, taking their ideas, input, opinions, and feedback into consideration. In other words, there must be innovation not only in the solution, but also in the procedure through which a given solution is created, financed, and put in place. Based on that vision, we have coined the following working definition of social innovation:

> Social innovations are new solutions to challenges faced by people whose needs the market does not meet, and that have a positive impact on society. They must be carried out through an inclusive process, incorporating the beneficiaries (people) to adequately define the problem, and employing public–private–people partnerships towards the development of the solution.[2]

Special emphasis is placed on the involvement of the beneficiaries in innovative processes and the importance of multi-sector partnerships. The reason for this emphasis stems from experience and the observation that the existence of a technology-based solution to a given issue does not mean that the issue will be resolved. The social innovation approach is the most suitable for projects designed for children with disabilities.

Technology and People with Disabilities

One particular group that can obtain life-changing benefits from innovation and new technologies are people with disabilities. There are devices that allow blind people to work with computers, programs that teach deaf children to read write and read, 3-D printers that produce prosthetics, and a long list of useful inventions. For example, Stephen Hawking, one of the greatest scientific minds of our time, would not have been able to discuss his findings without technology, as well as an entourage of people interested in his pronouncements, which is usually not the case for people with disabilities.

People with disabilities face difficult challenges. Many are prevented from communicating their preferences and needs effectively, and thus cease to be economic actors. The first task, then, is to identify clearly what people with a disability really need beyond assumptions. This requires that they explain themselves how they carry and cope with their disability. This notion also implies that the usefulness of technology for people with disabilities is twofold: it provides aids that promote their inclusion and it can help clarify their demands.[3]

The idea of technology providing a voice for people with disabilities also implies that, specifically with respect to education, information and communication technologies (ICT) can play a key role in promoting inclusion. For example, in cases where a disability prevents the acquisition of language skills, certain devices act as "communicators" and produce signals

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[2] A more extensive discussion on the definition of social innovation may be found in Guaipatín and Schwartz (forthcoming).

[3] We prefer the term *inclusion* to *integration*, as the latter is associated in some literature with the "normalization" or forced adaptation of the person to the regular education system, as opposed to respecting their diversity.

associated with a particular need, urgency, or emotion. There is also evidence on the usefulness of ICT for improving student achievement and self-esteem and expressing the aspirations of the child (Pérez and Sarrate, 2011; Zappalá, Köppel, and Suchodolski, 2011a and 2011b). Further down the road, the use of ICT in the school environment can provide students skills that are rewarded in the labor market (Entorf, Gollac, and Kramarz, 1999; Krueger, 1993).

An important consideration in this regard is that the educational experience needs to prepare individuals for the world they will encounter as adults. Thus, leaving ICT out of the learning environment may only deepen the exclusion of the disabled,[4] especially since modern studies on disability indicate that, whenever feasible, students with special needs should be placed in institutions where they interact with non-disabled students, for the sake of both groups. Inclusion is a two-way street, which is all too frequently forgotten.

Another hurdle in the incorporation of technology is that it needs to be used. This may seem a trivial thing to point out, but many overlook the fact that giving someone a device does not necessarily mean that they will benefit from it—or even that they will use it. A child with a disability may be presented with software to facilitate learning, but he or she will need a properly trained instructor to familiarize him with it. More importantly, the child needs to be confident enough to try the device, and the family needs to accept that the child may be helped by an outside invention. Innovators frequently encounter the fear that technology is too expensive, complicated, and "fragile," not for the use of children with disabilities, or a natural distrust of technology, as many believe that young minds become slothful because all the answers are readily available.

Thus, we begin to explain why it is that while a particular piece of technology may exist and be available, there is a long way to go before it yields all its benefits. The I-Lab team can present interesting examples of building bridges between people with disabilities and those who can provide the expertise, will, and funding necessary to implement the solutions.[5] The project

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[4] Traditional approaches to disability were based on differentiation, assuming that it entailed an impediment for the person to carry out regular activities alongside "normal" people. In contrast, current notions indicate that disability does not exist per se, but only as a set of difficulties that the affected individual faces when interacting with a world that has not considered them. For further reading, see OAS (undated) and Baña, Novo, and López (2010).

[5] The I-Lab's trademark is its unique approach to social problems, which are identified through open voting by the very communities we seek to impact. As of this date, the I-Lab has co-financed over 20 projects addressing the needs of the excluded, providing sustainable solutions to their needs. Some examples are the implementation of a teaching program for blind children in Colombia; an affordable, all-terrain wheelchair for people in rural Guatemala and Haiti, designed by engineers at MIT; and a fair-trade platform for Aymara women in Bolivia, Chile, and Peru. For more details, see www.bidinnovacion.org.

described in this paper is one of the most relevant, as it is one of the first cases that proved the need to start off at the beginning—grasping the issue from the affected person's end.
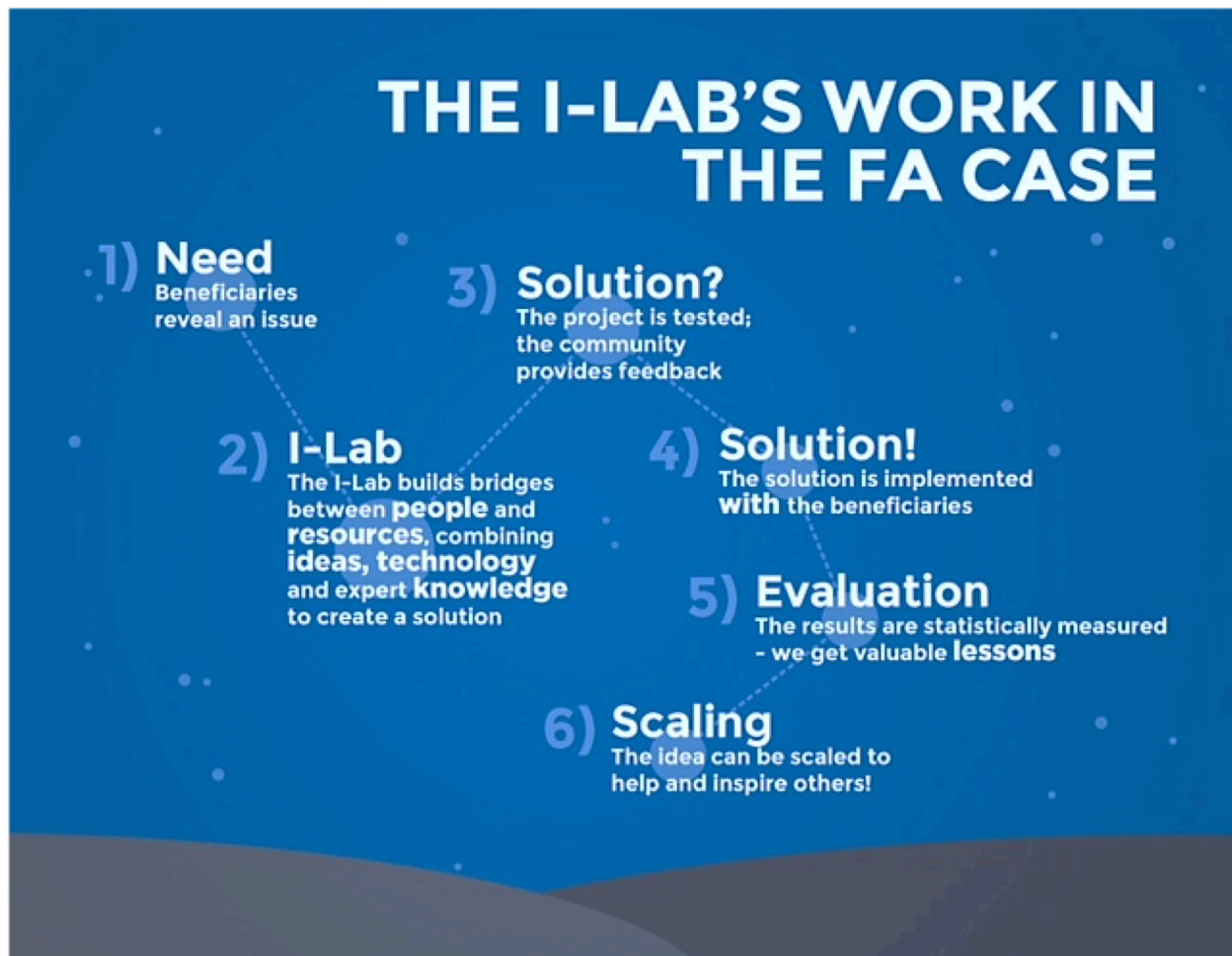
Understanding the Problem

Fe y Alegría manages a school in one of the poorest neighborhoods of Santo Domingo, a city in northern Ecuador in the province of Santo Domingo de los Tsachilas, where life is difficult for most. The school has two sections: regular education and special education. The latter was divided into two campuses, one for children with intellectual disabilities or multiple disabilities, and one for children who are deaf or hard of hearing.

FA regularly devotes its activities to the poor and the excluded. It has developed a long-term plan for educating children with disabilities through a method known as progressive

inclusion, which seeks to gradually erase the divisions that are traditionally drawn between children with and without disabilities in schools. The pilot plan was to be implemented as a targeted initiative, focused on the use of ICT to promote the inclusion of children who are deaf or hard of hearing.

One of the issues that FA faced was that the deaf or hard of hearing children were brought in very late. Although the importance of language acquisition as the foundation of intellectual development is well documented, the lack of proper access to oral language makes full literacy difficult for deaf or hard of hearing children. Children with normal hearing abilities are usually immersed in language from the day they are born; deaf children—especially those who are not diagnosed as being deaf from an early age—miss the connection between the concept, the sound, and the graphic representation, and are usually taught "their" language—sign language—at a much later time (if at all). After the age of six, the window of primary language acquisition starts closing, but oftentimes deafness is not detected in a timely manner or the parents are reluctant to bring the deaf child to school. Hearing loss occurs across a spectrum, and the affected family has to resort to one or more remedies (e.g., sign language, speech therapy, and hearing aids) depending on the severity of deafness.

These reasons explain why many children had no communicative abilities when they entered school. They had neither sign nor spoken language, but only the so-called "home signs," or basic signs that families invent. Consequently, when the children entered the FA institution, much of their time was devoted to learning Ecuadorian Sign Language as a tool for learning the "regular" school subjects.

According to the International Disability Rights Monitor Report for 2004, an alarming 39.4 percent of people with a disability in Ecuador receive no education, 42.3 percent complete only primary school, 10.5 percent complete high school, and no more than 1.8 percent obtain a college degree (International Disability Rights Monitor, 2004). Another interesting fact was that of all children with a disability who attended school in Ecuador, more than 56 percent were enrolled in an institution that cares only for children with disabilities as opposed to a "normal" school, making their integration even more difficult.

In this context, the FA project was aligned with the "National plan for the Good Life,"[6] developed by the Ecuadorian government in 2007 (see also Samaniego, 2011). In 2011, the government passed a law that compels Ecuadorian companies to set aside at least 4 percent of all jobs for people with disabilities, and Ecuador's former vice-president, Lenin Moreno, pledged that the government would reach out to all disabled people who need help.[7] The passage of the Organic Law on Intercultural Education is an example of this commitment and constitutes the legal framework for inclusive education at all stages and levels of schooling.[8]

To sum up, education for children with disabilities in Ecuador was very basic and not focused on their inclusion with the rest of the population. There were still important needs to address regarding mainstream education. Facts and figures showed that in Ecuador there is a significant gap between the inclusion policy and the current situation of those who need to be integrated. While Ecuadorian law states that all children with disabilities must be a part of the education system, they do not indicate how this should be done.

Challenge One: Putting Technology to Work

With support from the Italian Trust Fund for Information and Communication Technology for Development, and in partnership with FA, the I-Lab designed a program that would make lasting changes in the lives of the children of Santo Domingo, and demonstrate that inclusion and improved education—using ICT—could have measurable positive effects on the economic prospects of children with disabilities, as they increase the likelihood that they will attend college and thus increase their incomes and lead more independent and fulfilling lives. By achieving these goals, the project would broaden opportunities of children with disabilities, both for themselves and their community, changing the perception that these children are a burden.

It was apparent to the I-Lab team that achieving the project's objectives would not just be a matter of giving one or two lectures or dropping computers off at the FA facility. The shortages went beyond the mere availability of material supplies. Managing a school in an impoverished suburban neighborhood proved harder than expected. There was a crucial lack of infrastructure, adapted curricula, teaching materials, teacher training to provide for deaf children and children

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[6] Plan Nacional para el Buen Vivir, currently in the second version for 2013–17. For more information, see www.buenvivir.gov.ec.
[7] See http://www.theworld.org/2013/02/ecuador-lenin-moreno/
[8] Ley Orgánica de Educación Intercultural, Ecuador published in the Official Gazette No 417 on March 31, 2011.

with intellectual disabilities, and involvement of families in their children's education. Most parents of deaf children did not speak sign language and, according to the director at the FA center in Santo Domingo, classes for deaf or hard of hearing children covered no more than 40 percent of a year's standard curriculum.

Beyond the educational issues, the realities of these children were marked by poverty, abuse, and bullying; rampant discrimination; and a general sense of rejection and shame, even within their own families. From the project's inception, the team could see that the greatest difficulty would be removing the social stigma that prevents children with disabilities from achieving their full potential. Since this project was about innovation for inclusion, the team decided to work directly with the excluded. The breakthrough was not only in introducing technology to the underprivileged, but in making the underprivileged the protagonists of their own progress.

That particular approach was facilitated by a comprehensive survey administered and completed prior to the actual intervention. The survey—which would later be used as a baseline for impact evaluation—not only collected typical socioeconomic data but also inquired about the children, teachers, and families' emotional state and expectations. Having extensive data prompted the formation of a multi-disciplinary team that would be able to gradually walk the community through the changes. The group included professionals from various fields, including economists, education experts, ICT specialists, psychologists, and professors in the Master's Program in Special Education at the Universidad Politécnica Salesiana of Ecuador.

With the survey, team, and plan in place, the work began by revising FA's teaching methodology and programs. A successful project required FA to develop and implement a proper strategy on inclusive education for the children it serves—that is, more than just a set of instructions for the classroom. The group from the Universidad Politécnica Salesiana created and implemented a training program for the teachers and instructors working in FA in order to qualify them to work with children with disabilities. They had to learn communication techniques and new teaching approaches and to incorporate the use of ICT tools and equipment.

While the teacher training was taking shape, the ICT tools and educational equipment that had been provided were selected (by specialized consultants) and installed, including hardware, software, and special technology devices for teaching children with disabilities. The experts in ICT trained the 15 FA staff members (including teachers, a speech therapist, a

physical therapist, a stimulation therapist, and a social worker) in the use the relevant ICT to appropriately address and educate a child with a disability. Each of the 123 children was sure to understand the new learning resources and to feel like they were an important part of their own development (as they in fact did). Thus, in continuous collaboration with the deaf students, the I-Lab team and FA developed an Ecuadorian version of existing software called *Sueñaletras*,[9] which helps link images or videos to text, and has the much appreciated educational virtue of keeping the students' attention.

At the same time, the psychologist led the team members as they reached out to the people of Santo Domingo to gain insight into their hardships, needs, and everyday life through activities ranging from a simple conversation with the children to registering an accurate description of their homes. In particular, the team focused on children with disabilities and their families, listening to their stories, addressing their concerns about the project, and helping them to adapt their lifestyles so they could get the most possible out of the program. The work focused especially on countering myths about deafness, demonstrating the importance and the possibilities of education, and showing the importance of communication. Slowly but surely, the team was able to instill an awareness of their right to inclusion and quality education.

Once this groundwork was laid and the team saw that the families recognized the importance of investing in their children's learning, the second task was tackled: raising awareness among fellow students about the realities and needs of the younger children with disabilities that would soon be joining their ranks. The presence of "different" children created tensions with other students, and brought about bullying and discrimination. Although these conditions made the work harder, witnessing them was positive for the project, as they drove the team's efforts towards the eradication of deeply ingrained social stigma, which otherwise would have annulled the other advances that had been made up to that point. Soon after the intervention began, parents started to contact FA and confirm their children's hearing loss or specific disability, providing them with the first step to consider the appropriate means for a quality education. The project started yielding results even as it was ongoing!

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[9] *Sueñaletras* is a program developed—with support from the I-Lab—by the Center of Technologies for Inclusion at Pontificia Universidad Católica de Chile to facilitate alphabetization of deaf or hard of hearing children. For more information, see http://www.cedeti.cl/software-educativo/suenaletras/.

PROJECT: **ICT FOR INCLUSION**
TIMELINE
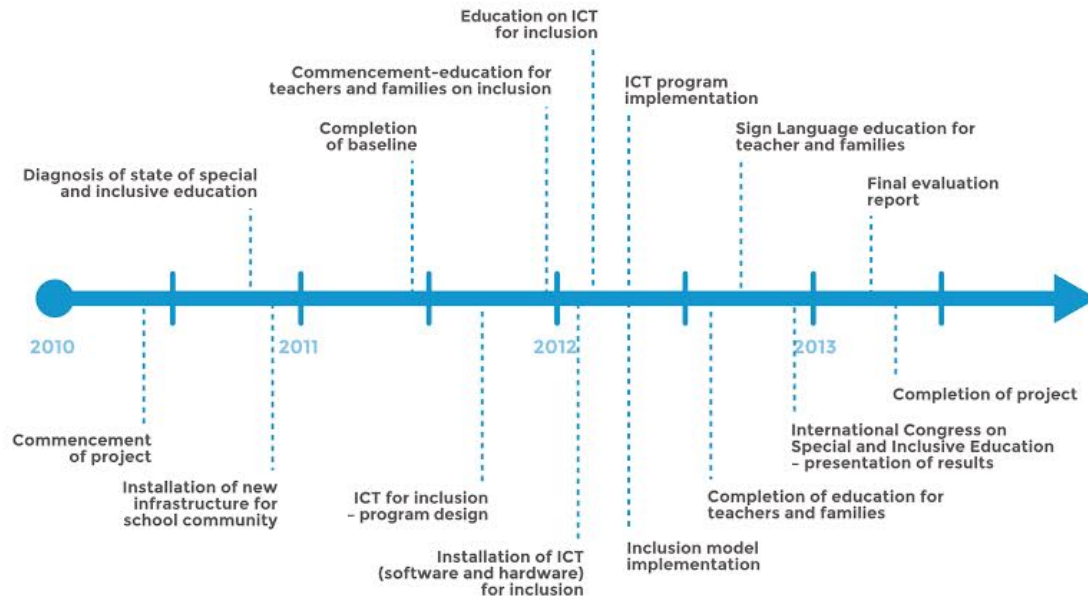
Challenge Two: Hard Evidence

The effectiveness of the project's hypothesis required proof of efficacy in two stages.[10] The first stage was proving that education positively affects the future income of individuals with disabilities. The second was demonstrating that the intervention was effective in increasing both attendance and the quality of education of the children with disabilities in the FA school of Santo Domingo. With respect to the second stage, there are sub-factors that need to be considered in a project of this nature: the value of psychological well-being and the value of ICT as catalysts for a successful education.

ICT has been used extensively in education throughout the world, but its effects have not been as extensively measured in terms of its potential as a tool to provide inclusive and better quality education for children with disabilities. The I-Lab strives to pair hard work with rigorous

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[10] Data analysis was conducted by Paul Carrillo, Ph. D., Assistant Professor of Economics and International Affairs in the Department of Economics and Elliot School of International Affairs at George Washington University. Results are detailed in FA (2013).

evaluation, so as to depart from the anecdotal. Our success may bring new opportunities to many communities, and a precise evaluation is, as pointed out before, the foundation of learning.

The surveys were professionally conducted and analyzed. They covered several indicators of the quality of life of students, such as demographic characteristics, use of technology, interaction with society, aspirations, and perceptions of self-esteem and school. The results presented have statistical relevance. It is important to note, however, that the project was part of a pilot initiative and that it focused on a relatively small group of children. In that context, the sole fact of measurement has enormous value.

Identifying the effects of ICT in academic performance and in the lives of children with disabilities would ideally require an experimental design, where the subjects receiving and not receiving treatment are determined randomly. However, the FA project was conducted in a single school, and for practical and ethical reasons it was not feasible to randomize the participation of students in the program.
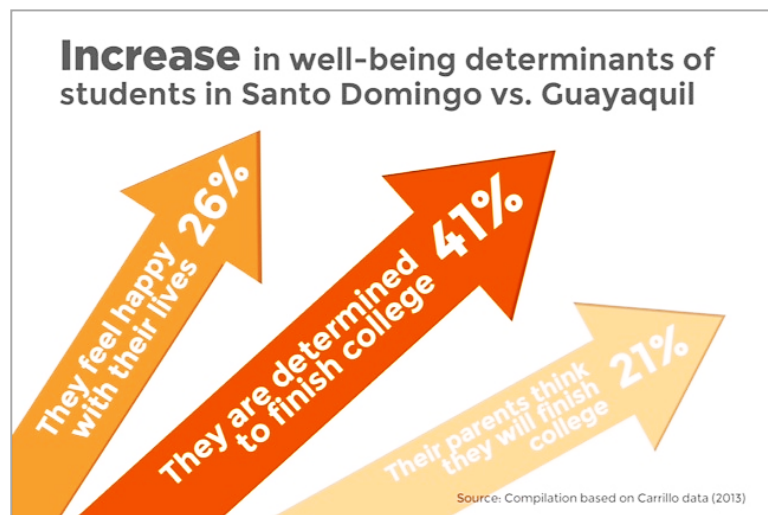
The statistic difficulties were dealt with through a differences-in-differences method, whereby a group of students similar to the one receiving the program was identified in Guayaquil, so as to allow an adjusted comparison. Two representative surveys were made: one before the start of the program (baseline) and another after its implementation (endline). The baseline surveys permit comparison between the lives of students who were recipients of the program (Santo Domingo), the treatment group, and changes in the lives of students who were not treated (Guayaquil), the control group. Preexisting relevant differences were taken into consideration using the information from the Census of Population and Housing conducted in Ecuador in 2010 (CPV), in order to isolate the factors when performing the comparison. The methodology described above allows us to assert that the improvements found in the endline survey are attributable to the project. The baseline survey was performed between June and September 2011, before the start of the project, and was executed by a team of professional interviewers from the Catholic University of Ecuador. The survey interviewed 235 students, 152 households, and 33 teachers. The same team of interviewers executed the endline survey in January 2013.

Additionally, measuring the children's level of happiness, hope, and sense of possibility about their future presented its own set of difficulties: responses to the corresponding questions are highly subjective, may depend on something that has happened on the day of the survey, and

are influenced by cultural perceptions of what it is to be happy. Therefore, the survey of these matters required an in-depth evaluation and close work with the children and their parents to document their evolving sense of the future and the evolution of their expectations over time.

The I-Lab team was challenged as to figuring out how to get the most direct information from students who were deaf or had a hearing disability, and it also happened that this was the first experience of the sort for most of the surveyors. But the happiness measurement was of great importance, because arguably self-esteem and hope constitute the engine of personal effort.

Increase in well-being determinants of students in Santo Domingo vs. Guayaquil

They feel happy with their lives 26%

They are determined to finish college 41%

Their parents think they will finish college 21%

Source: Compilation based on Carrillo data (2013)

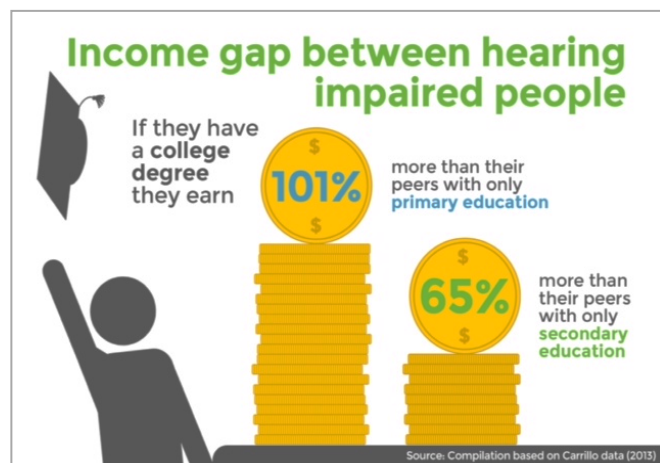The results demonstrated that the well-being and academic aspirations of students at the FA Institute of Santo Domingo significantly increased compared with the aspirations of their counterparts in Guayaquil. The students from the FA in Santo Domingo developed a sense of a positive, fruitful future; a sense of possibility; and, in general, have increased their level of happiness in relation to their counterparts in Guayaquil. The students' assessment of the quality of the education received has also improved comparatively. The percentage of students who plan to continue their studies at the school in Santo Domingo increased by an impressive 40 percentage points after receiving the treatment, compared with their peers in Guayaquil. Beyond the students, the aspirations and expectations of the parents for their children changed significantly, which is key in influencing the emotional support and guidance they provide.

Both information and experience show the success of the outreach in informing the community about what FA offers, and that the threshold for seeking help has been lowered, which in turn implies a reduction of stigma surrounding disabilities and a sense of trust in the solution at hand. In effect, as a direct consequence of the program, there has been an increased demand in Santo Domingo for FA's early intervention services for children with disabilities, and there has been a sharp increase in FA school enrollment. These young children will have a better chance at succeeding because they have received educational services and stimulation from an

earlier age, which is important for all children but extremely so for deaf children, so that they can start learning sign language and acquiring communication skills.

At the same time, the evaluation shows that thanks to the use of ICT, children who are enrolled in school are sure to learn more than if they had attended school before the program, which defeats the caveat usually made in education policy evaluations that attendance does not equal learning. And lastly, ICT is an appreciated tool in the labor market, so its acquisition narrows the gap between people with and without disabilities when applying for a job; ICT is ever-present in the modern world, and people with disabilities have the right to be educated in a way that will enable them to interact with the world as it is.

Admittedly, estimating the returns to education is a complex task, particularly as to proper isolation of variables; specifically in Ecuador, there is scarce data regarding academic performance (with and without the use of ICT), which, as concerns the project, meant that the line of reference for the evaluation was also to be determined by this project. Nonetheless, statistics show that, in Ecuador, for both disabled and non-disabled individuals the completion of high school and college is associated with higher incomes.

Fortunately, the statistics on disability in Ecuador are quite thorough, coming from the CPV. Analysis and econometrics performed with information from the Internal Revenue Service of Ecuador (SRI) and the National Council for Disability regarding annual income, demographic characteristics, and disability status suggests that higher education may be credited as the source of higher income for people with disabilities in Ecuador by as much as 65 percent (FA, 2013) Based on this information it can be assumed, for instance, that if the monthly income of someone who is deaf or hard of hearing that left school but did not go to college is $360 and returns to university education are 65 percent, we can estimate a total return over the life of the worker of

approximately $45,000. Consequently, with a US$307,000 investment,[11] the I-Lab project leveraged the potential future salaries of 60 students with disabilities—only half of the treatment group—to a total of US$2.7 million. This sort of information, which before might have seemed dry or detached from the project, allows us to confirm today that if the project prompted attendance in higher education of even a minimum of the children of the FA school in Santo Domingo, a relevant difference has been made.
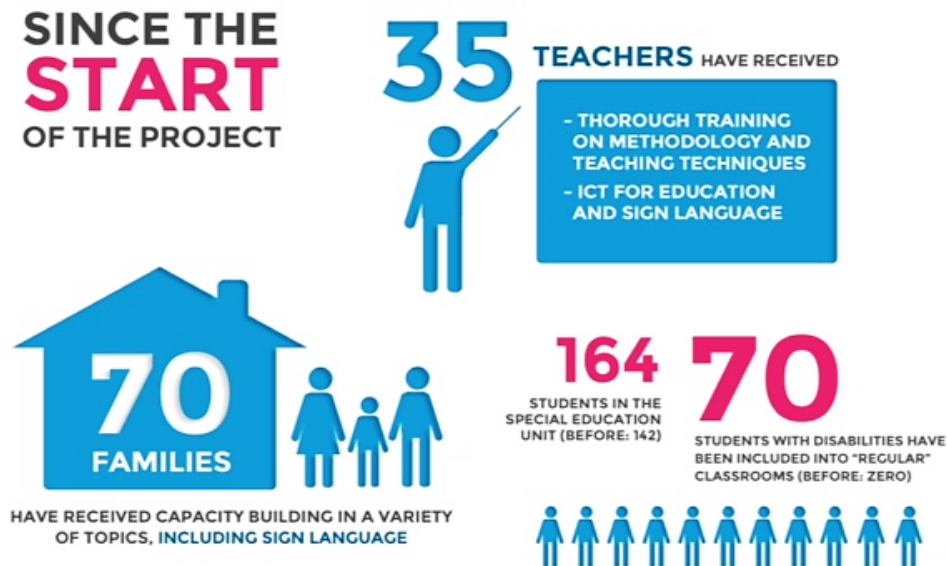
In summary, there is empirical evidence that, after the execution of the program in Santo Domingo, the subjective and objective well-being of students of Santo Domingo has improved. The results achieved and measured suggest that programs that promote the use of ICT in education are important for raising the self-esteem of children with disabilities, increasing their academic aspirations, helping them integrate into their community, and increasing the likelihood that they will complete their secondary education and university.

A Way Forward

Currently, FA is developing a second phase of this project in Santo Domingo, to move from the education sphere to the promotion of vocational ICT skills for students with disabilities, such as computer programming and development, digital photography, cinematography, and others. Furthermore, this project has been replicated in a number of FA centers outside of Ecuador, including in Bolivia.

In July 2014, FA received first place in the National Contest of Good Practices for inclusive Education in Ecuador, awarded jointly by the country's Ministry of Education and the Iberoamerican States Organization for Education, Science and Culture. The results of this project are already influencing the government's approach to inclusive education in Ecuador on a national level.

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[11] Financing provided by the IDB amounted to US$377,000 to be disbursed in a 36-month period, of which US$307,000 was directly applied to treatment and the remaining US$70,000 to evaluation.

SINCE THE **START** OF THE PROJECT

35 TEACHERS HAVE RECEIVED
- THOROUGH TRAINING ON METHODOLOGY AND TEACHING TECHNIQUES
- ICT FOR EDUCATION AND SIGN LANGUAGE

70 FAMILIES
HAVE RECEIVED CAPACITY BUILDING IN A VARIETY OF TOPICS, INCLUDING SIGN LANGUAGE

164 STUDENTS IN THE SPECIAL EDUCATION UNIT (BEFORE: 142)

70 STUDENTS WITH DISABILITIES HAVE BEEN INCLUDED INTO "REGULAR" CLASSROOMS (BEFORE: ZERO)

Breaking the pattern of neglect and inadequate education for children with disabilities is a difficult and radical undertaking. If the FA program could increase the likelihood that students attend college, then monetary benefits are high given the high returns to education in Ecuador and the relief that the independence of that member brings to the family.

Above and beyond the demonstrated economic impact, the project brought about a fundamental change in the affected community by countering negative ways of thinking about disability. Today in Santo Domingo, disability is something to be dealt with; the tools and awareness are there. Expenditures in ICT may now be seen as an investment and not as an experiment for a lucky few, as the betterment of the disabled person's life reduces the economic and social impact of their respective disabilities and makes them productive members of society.

This project's success relied on strong teamwork from a very dedicated group of people, both inside and outside the I-Lab. The I-Lab's work with Fe y Alegría; the partnership and support of the Italian Trust Fund for Information and Communication Technology for Development; and, most of all, the close work with the community, children, teachers, education centers, and fellow students made this project a success. Its ability to be readily replicated and scaled and its measurable results make it an effective, tangible step toward lasting equality.

Policy Implications

This program has proven that technology can have an enormous economic impact on the lives of children with disabilities, even in the most adverse situations. The results are groundbreaking for a number of reasons. Most of all, the program has been able to foster a solid connection and partnership with the children and their community through a true bottom-up approach and rigorous evaluation of the results.

The I-Lab was able to experience first-hand how in today's world the big question in social innovation projects is not access to technology, but rather how technology is applied. Identifying the right technology for a given problem is only a part of the issue, and maybe the easiest. In order for innovation to be successful, there is important work to be done in involving other areas of knowledge, and especially in preparing the beneficiaries to tackle the challenges at hand and arriving at a point where all involved believe that the issues actually deserve to be tackled. This latter phrase is not just a slogan; it alludes to the concern that change needs to be ingrained in order to be sustainable.

Thus, the experience of the FA project sheds light on a discussion that goes beyond the world of people with disabilities. As the frontiers of technology are pushed every day, innovators need to continue to pay attention to human behavior to ensure that technology acts as a unifying and empowering service, rather than causing isolation. Therefore, any intervention that seeks improvement of social issues needs to contemplate the particular needs of the beneficiaries and address the constraints, stigma, and incentives that condition their choices, so that these choices can be made more freely with each passing day.

References

Agenda Nacional Para la Igualdad en Discapacidades 2013-2017. 2013. National Council for Equality of Disabilities (Consejo Nacional de Igualdad de Discapacidades). Quito, Ecuador: Government of Ecuador.

Baña, M., I. Novo, and B. López. "The Role of ICTs as a Factor to Boost Social Inclusion, Quality of Life and Welfare: Analysis of Collectives at Risk of Exclusion in Galicia, Spain." 2010. Economic Analysis Working Papers. Galicia, Spain: Universidad de A Coruña.

Entorf, H., M. Gollac, and F. Kramarz. 1999. "New Technologies, Wages, and Worker Selection." *Journal of Labor Economics* 17(3): 464–91.

FA (Fe y Alegría). 2013. "Tecnologías de información y comunicación en la educación de niños con discapacidad." Working Paper. Quito, Ecuador: FA. Unpublished.

Guaipatín, C. and L. Schwartz. Forthcoming. "Social Innovation: Toward an Operative Definition." IDB Discussion Paper. Washington, DC: Inter-American Development Bank.

Hanna, R., E. Duflo, and M. Greenstone. 2012. "Up in Smoke: The Influence of Household Behavior on the Long-Run Impact of Improved Cooking Stoves." MIT Department of Economics Working Paper 12-10. Cambridge, MA: MIT. Available at SSRN: http://ssrn.com/abstract=2039004.

Hopenhayn, M. 2010. "Las TIC como oportunidad de inclusión social en América Latina y el Caribe." Working document for the seminar "Las Políticas Sociales y la Sociedad de la Información: Brechas, Oportunidades y Derechos," held in Santiago, Chile.

Inter-American Convention on the Elimination of All Forms of Discrimination against Persons with Disabilities. 1999. Washington, DC: Organization of American States.

International Disability Rights Monitor. 2004. "Informe Regional de las Américas, 2004." Washington, DC: International Disability Rights Monitor.

Krueger, A. 1993. "How Computers Have Changed the Wage Structure: Evidence from Microdata, 1984–1989." *The Quarterly Journal of Economics* 108(1): 33–60.

OAS (Organization of American States). Undated. "Inter-American Convention on the Elimination of all Forms of Discrimination Against Persons with Disabilities." Washington, DC: OAS. Available at http://www.oas.org/juridico/english/treaties/a-65.html.

Pérez, G. and M. L. Sarrate. 2011. "Las TIC promotoras de inclusión social." *Revista Española de Pedagogía* (May-August) 249: 237–53.

Samaniego, P. 2011. "Políticas de igualdad – discapacidades: Propuesta conceptual para la construcción de un catálogo presupuestario." Working document. Quito, Ecuador: Government of Ecuador National Office for Planning and Development (Secretaría Nacional de Planificación y Desarrollo).

Zappalá, D., A. Köppel, and M. Suchodolski. 2011a. "Inclusión de TIC en escuelas para alumnocon discapacidad visual." Buenos Aires, Argentina: Ediciones Ministerio de Educación de la Nación Argentina.

———. 2011b "Inclusión de TIC en escuelas para alumnos sordos." Buenos Aires, Argentina: Ediciones Ministerio de Educación de la Nación Argentina.