

Environmental Concerns and Parental Participation in Plan CEIBAL

The Case of the Pedal Charger

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Abstract

The One Laptop per Child Initiative (OLPC) was created with an educational objective and aiming to children, but the Uruguayan version of it emphasizes impact in the households. Policies for the integration of the families of beneficiary children, nevertheless, are still under development. The project has high support by public opinion in Uruguay, which results in displays of wittiness and popular creativity. In this study I will argue that the creation of a pedal charger, which responds to the energy concerns of people in Uruguay, was the way found by one of these parents to participate in the project, as well as a way the children found to bring in their environmental knowledge into it.

Keywords: OLPC, plan CEIBAL, development, laptop, education, poverty, children, Uruguay, technology, appropriation, households, families, parents, participation, energy, ecology, electricity.

Introduction: a pedal charger for the XO laptop

In late 2008, the Uruguayan public school number 224 received laptop computers for its 600 students. This was part of Plan CEIBAL, the Uruguayan version of the One Laptop per Child (OLPC) initiative that would make Uruguay, in 2009, the first country in which all children in elementary school had been given a laptop computer.

The distributed XO laptops needed to be charged after two or three hours –depending on usage-, but the school did not have enough electricity sockets. Moreover, the 224 school was part of the “Escuelas Sustentables” – sustainable schools - initiative. This led children to worry about the charging of their XO laptops and the use of electricity. After some research on renewable resources of energy, the idea came from one parent. Soon, with the help of this parent, and using discarded materials of old home appliances, a pedal charger was created and installed in the school¹. In the process, children learned about the different sources of energy, as well as the link between mechanical and electrical energy. They found a solution for charging their laptops and came up with further initiatives to improve the charger, as well as the comfort of those who would be using it.

What underlies the children's concern about the energy consumption of the XO computers? And what is behind the parent's idea of a pedal charger? In the following pages I will further explore these two questions.

Methodology

For answering these questions, I will start by briefly describing the one-to-one initiatives in general, and the specificities of OLPC. Then I will take a closer look at one case of OLPC implementation: Plan CEIBAL in Uruguay. I will compare the objectives of Plan CEIBAL with those of OLPC. I will describe the decision and implementation processes of Plan CEIBAL, as well as the actors involved.

Understanding the children's concern about energy consumption as an ecological concern, I will then explore the main ecological concerns related to the OLPC initiative in general. I will analyze the

¹ A video showing the pedal charger in operation can be found in <https://picasaweb.google.com/voluntariosrapceibal/ENV2009#5411896325877610546>.

idea of the pedal charger as responding to a generalized energy concern in Uruguay, which I will further explain in this section. Environmental concerns related to OLPC have started to be raised in Uruguay too, but not the one on waste, as noted in the last sub-section of this second part.

In the third and last part of the paper, considering the parent's idea of the pedal charger as his way to participate in Plan CEIBAL, I will explore parental participation and family involvement in the project. For that I will employ official evaluations of Plan CEIBAL, Uruguayan press clipping on the topic, academic criticism and the opinions of a group of beneficiary families I interviewed in late December 2010. Most information on Plan CEIBAL is available only in Spanish, the English version of all quotes results from my personal translation.

About the interviews: In the course of one week I contacted a total of 10 families, all of which have their children enrolled in a communitarian center affiliated to my home university: Universidad Católica del Uruguay. I visited these families in their houses, saw the computers and talked with the children who owned them, as well as with their parents and siblings. These were semi-structured and in-depth interviews lasting one to two hours each. I did not intend to conduct a representative study of all population but to take a closer look at how children in critical contexts and their families –said to be the most benefited by Plan CEIBAL in official evaluations – use the XO laptops in their households. The names of the interviewees have been changed².

It is based on all mentioned sources of information that I will draw my conclusions, answering the two research questions mentioned above.

Plan CEIBAL: a One-to-One project based in the OLPC initiative

In recent years, we have seen the development of several computer initiatives, more specifically laptop initiatives. Most originate in the so-called ‘developed world’ and target children in ‘poor’ countries. These initiatives have as a main feature the delivery of one laptop computer to each child, which led to their denomination as *one-to-one* or 1:1.

²To receive authorization for visiting the houses of the interviewees, I contacted my home university and they sent the families authorization letters in which the anonymous character of the interviews was guaranteed.

To be labeled *one-to-one*, an initiative should allow student's individual access to computers, but "the scope and detail of one-to-one initiatives are largely defined by the initiating institutions" (Penuel, 2006, p.330), not allowing for a detailed definition common to all.

The One Laptop per Child Initiative

Give one laptop computer to every single boy and girl, therefore making computers available to everyone. The OLPC initiative originated in the United States. In January 2005, the MIT Media Lab³ launched a research initiative to develop an economic laptop computer with a retail cost of USD100. Soon the project split from MIT and One Laptop per Child (OLPC⁴) was born as an independent, non-profit association in March 2006.

As expressed in the One Laptop per Child Wikipage monitored by OLPC (<http://wiki.laptop.org>), this association would "oversee the creation of an affordable educational device for use in the developing world." By these means it would "create educational opportunities for the world's poorest children by providing each child with a rugged, low-cost, low-power, connected laptop with content and software designed for collaborative, joyful, self-empowered learning," as stated under Vision on OLPC's institutional website (<http://one.laptop.org>). The XO-1 laptop –and its successor the XO-1.5- were the result of this initiative⁵, which currently claims to be in hands of 2.3 million children and teachers in 31 countries (<http://one.laptop.org>).

The five ruling principles of OLPC are: "kids get to keep their laptops; they have to be free to take them home, and use them whenever they want" (OLPCFoundation, 2008), a focus on primary education of children 6-12 years of age, massive deployments to all classrooms at the same time,

³" The MIT Media Lab is the Laboratory of the School of Architecture and Technology of the Massachusetts Institute of Technology

⁴ OLPC was funded by its current Chairman, Nicholas Negroponte, together with member organizations AMD, Brightstar, eBay, Google, Marvell, Nortel, Quanta, Red Hat and SES Astra.

⁵ For more information on the XO laptop see Appendix.

widespread availability of internet connection for deployed laptops and usage of free open source software, allowing for continuous improvement.

Adapting OLPC to Uruguay: principles and objectives

“Every child will have a computer, and every teacher will also have one” (La República, 2007), said former Uruguayan President Tabaré Vazquez in a press conference in December 2006, announcing Plan CEIBAL, the Uruguayan version of OLPC. Five months later, the first XO laptops would arrive in Uruguay. By 2009, Uruguay would become the first country where all children in elementary school had been given a laptop computer.

Even when Uruguay chose to acquire XO laptops, focus on primary education, provide widespread internet access and allow child ownership, it did not abide by all ideas promoted by OLPC. As explained by Warschauer (2010),

Uruguay has also gone its own way in implementing the national laptop program, adopting certain features of the OLPC model [...] but ignoring others. For example, while OLPC leadership has badmouthed pilot programs, staged implementation, and formal evaluation, Plan Ceibal has included all three of these elements.

The objectives also differ from those of OLPC. The presidential decree 144/007, which creates Plan CEIBAL, signals the project aims “to conduct the studies, assessments and necessary actions to provide each child in elementary school age and each teacher in the public school with a laptop computer, train the teachers in the usage of this tool and promote the elaboration of educational contents in accordance with those” (Uruguay. Presidency of the Republic, 2007). Nevertheless, even when having one laptop per child was the aim of the project - to be achieved by 2009:

CEIBAL’s longer-term objective is to promote social justice by promoting equal access to information and communication tools for all our people [...] It is not oriented toward creating an IT-friendly environment merely inside the classroom, but also outside: students are expected to take laptops home so that the computer can then be shared among family members (Vazquez, 2009).

Uruguay puts the emphasis on bridging the digital divide⁶, not merely by using laptop technology for an education thought to help reduce poverty in the future of beneficiary children, but also by having the laptops effect their households..

This is relevant since, before Plan CEIBAL was implemented, less than half of the Uruguayan households (48%) had computers. Roughly the same amount of people (47%) considered themselves as internet users, half of which were using an internet connection at home (Grupo Radar, 2007). By 2010, after three years of Plan CEIBAL's implementation, 69% of the households have computers, 15% of which only have the XO - 35% in low-income families-. Internet users are 58%, 72% of which use internet at home. 87% of those aged 6-11 are internet users -up from 55% in 2007. About 75,000 adults started to use internet since they got an XO in their homes (Grupo Radar, 2007, 2010).

Plan CEIBAL had, therefore, objectives that surpassed children and classrooms, to also include parents, siblings and other family members. It “does not see itself as an 'education project' per se, but rather as a project to help transform larger society, with the education system as just the initial vector through which the project hopes to infect all of Uruguay with a new level of 'connectedness'” (Trucano, 2010).

Decision Making and Implementation in Uruguay: Processes and Actors Involved

“Uruguay, bless their hearts, small country, not so rich, the president said he'd do it and guess what? They did do it” (EG 2007, 2008), said Negroponte referring to the Uruguayan decision to implement OLPC. In fact, the decision came from the executive power, with no consultation to other government institutions. “Ceibal is an initiative that was promoted by President Tabaré Vazquez and to which the National Administration of Public Education (ANEP⁷) was incorporated later on” (Draper,

⁶ For more information on the digital divide see Williams, 2001.

⁷ Created in 1985, the ANEP is a legal autonomous entity which has among its duties the extension of education to all Uruguay inhabitants, to assure equal opportunities to all pupils and to stimulate self-education (Uruguay. General Assembly of the Senate and the House of Representatives, 1985, article 6).

2009). Soon the Technical Teachers Assembly (ATD)⁸ raised concerns about the great budget commitment implied⁹ (El Espectador, La República, 2007), but the decision was made.

The presidential decree 144/007 (2007) signed by Vázquez ordered the creation of Plan CEIBAL¹⁰. A Commission of governmental authorities¹¹ was created to define the “conditions, rhythms and contents” to advance this project and accomplish the aforementioned aim of one laptop per child by 2009. The technical and operational implementation would be in charge of the Uruguayan Technology Lab (LATU). A “competitive bidding process” (Warschauer, 2010) led to the choice of XO laptops.

8 The ATDs were created in 1985 with a “right to initiative and consultative function in the techno-pedagogical problems of the respective branch and in general education topics” (Uruguay. General Assembly of the Senate and the House of Representatives, 1985, article 19.8).

9 CEIBAL’s institutional website does not provide budget information. It has a transparency section with a “Budget and Salaries” sub-section, but only the salaries corresponding to each post are specified under it. According to Vázquez (2009), the initial costs of CEIBAL consisted in launching the project, as well as in buying laptops for all public primary education students - which are estimated in over 300,000 - and some 12,000 teachers. This means a starting cost of 100 million of USD. Additionally, every year Vázquez estimated an additional expenditure of 15 million of USD for maintaining and continuing the program.

10 The full name of the project is “Basic Information Educational Program for Online Learning” (Vazquez, 2009) with “CEIBAL” as an acronym

11 The Presidency of the Republic –executive power-, ANEP, the Primary Education Council (CEP), the Education and Culture Ministry (MEC), the Uruguayan Technology Lab (LATU), the National Telecommunications Association (ANTEL), the Electronic Management and Information Society Government Development Agency (AGESIC) and the Research and Innovation National Agency (ANII) would all have one delegate in this Commission.

Ignoring OLPC's recommendation to avoid pilots, Uruguay started its implementation with a pilot project in the small town of Villa Cardal¹². Children enrolled in the only public school of this town received the first 150 XO laptops, donated by OLPC.

According to its institutional website (<http://www.ceibal.org.uy>), Plan CEIBAL was implemented in four stages¹³, after which Uruguay then became the first country to have completed the OLPC initiative. 2,232 public schools and 16 private schools participated, reaching 369,727 children and roughly 18,000 teachers (Orfila, 2009).

During these four stages Plan CEIBAL underwent an incubation process¹⁴. On January 2010, the Uruguayan government passed Law number 18.640, creating the Center for the Technologic and Social Inclusion (CITS), directly dependent of the executive power. CITS absorbed Plan CEIBAL and took on its management¹⁵ (Uruguay. General Assembly of the Senate and the House of Representatives, 2010, articles 2-4).

12 Villa Cardal is 80 kilometers from the capital, in the 'interior' of Uruguay, and has less than 2,000 inhabitants.

13 (1) In the first half of 2007, Escuela N° 24 in Villa Cardal, Florida, received the laptops, roles and procedures were tested in this pilot. Uruguay is divided in 19 regions called '*departments*'. The capital city of Montevideo, together with its metropolitan area, comprises one of these '*departments*'. Florida is another one of them. (2) The second semester of 2007 XO laptops were distributed to all children enrolled in public schools in Florida. The CEP opened a tender for the Pedagogic Coordination of CEIBAL, which resulted in the creation of an Education Commission. (3) During 2008, other 17 regions in the interior of Uruguay were covered. Only the capital city of Montevideo and its metropolitan area were excluded until a fourth stage (4) in 2009, when this last region was covered. During the third and fourth stage, a new governmental decree extended CEIBAL to private primary education institutions and planned its extension also for the first four years of high school education in public schools starting 2010.

14 Plan CEIBAL was incubated by Ingenio, a "company incubator" that belongs to LATU and aims to "provide support to dynamic and potentially profitable ventures" (<http://latu21.latu.org.uy/ingenio/>).

15 CITS became a legal entity of public law responding directly to the Presidency of the Republic. The board of CITS is composed of a directing delegate of the executive power and three other members designated – one each - by the ANEP, the MEC and the Ministry of Economy and Finances (Uruguay. General Assembly of the Senate and the House of Representatives, 2010, articles 2-4).

Nowadays, Plan CEIBAL is being implemented in high school, and new challenges are encountered as students move from elementary to high school, teachers not always use laptops in school, training and contents are lacking, the use of computers is not always appropriate, some computers break or go in disuse (Capurro, 2010, Gumucio-Dragon, 2009, Warschauer, 2010). While Uruguay works on improving Plan CEIBAL, some voices have been raised on environmental concerns. In the following section I will deal with this environmental aspect of the project.

‘Green’ XO Laptops? Ecological Concerns

‘What would nature say?’ asks Jeff Maynard (2008) to open his Environmental Footprint Assessment of E-learning (p.2), quoting a 1978 script by Ursula Franklin on environmental awareness in technology introduction. “Belief in technology led, and will increasingly lead, to ecological disasters” writes Schuurman, (2000, p.10). In fact, Peet et al (2011) signal that throughout history “some profound environmental problems [...] were either ignored or deferred” (p.12) due to the need of constant economic growth in a capitalist economy in which environmental degradation is “not an unfortunate accident [but] part of the logic” (p. 26).

In this logic, the introduction of millions of laptops in the ‘third world’ may have to do with the search for new markets, ‘over-consumption’ to support the ‘over production’ (Peet et al, 2011, p.15); what Kentaro Toyama defined as “the expansion of a brashly successful technology industry into emerging markets” (cited in McLemee, 2010). With the announced annual deployment of 150 million laptops (Cowan, 2010, p.24), most of which would go to the ‘third world’, many worried about the environmental consequences (De Bruyn, 2007, Maynard, 2008). After all, “anytime a new technology becomes a household item, its ability to impact the environment increases” (Maynard, 2008, p.5).

Environmental Concerns and OLPC

Concerns had to do with laptop production, use and disposal. The production consumes the most resources (Maynard, 2008, Streicher-Porte et al, 2009). In the usage stage, laptops and internet connections both consume energy. As computers get damaged and stop working, which the OLPC website estimates occurs after three years, a plan for the final disposal of all laptop components is needed.

The OLPC website does not specify how computers are produced, but it signals that “the XO is compliant with the European Union's RoHS Directive, containing no hazardous materials. Its LiFePO₄ batteries contain no toxic heavy metals, plus it features enhanced battery management for an extended recharge-cycle lifetime” (www.laptop.org). Nevertheless, as signaled by De Bruyn (2007, February 1), the EU standards “may not always be relevant for developing countries, which often lack capacity to dispose these products safely”.

As for energy consumption, OLPC says the XO is “energy-efficient”. Indeed, a Colombian study for choosing computers for their educational programs signals its energy consumption is 2.5W when active¹⁶, and 0.3W standby (Streicher-Porte et al, 2009, p.3508).

There are no plans on the final disposal on the OLPC’s website. De Bruyn (2007) cites OLPC member Seymour Papert as saying “we are seriously worried about the environmental issues, but we cannot solve everything at once. It is better to have computers out there in the hand of the children, than to sit and worry about how to solve the disposal problem before they go there”. This corresponds to what Peet et al (2011) identify as a recurrent phenomenon nowadays: the “ability to contribute to short-term financial profit becomes the main concern, and long term consequences are not so much ignored as glossed over through ideological incorporation (‘we are all environmentalists now’)” (p.22). The green color of the XO laptop is, according to De Bruyn (2007), a ‘smart’ way to appear as environmentally friendly.

Waste is the main environmental concern about OLPC worldwide. What will happen when the XOs stop working? Will countries be able to treat the components properly? Where will all that plastic end up? The Colombian study concluded that buying XO laptops was the “least sustainable scenario” (Streicher-Porte et al, 2009, p.3506) for their country, among other things because “local conditions – such as the ability to maintain and repair equipment and appropriate facilities for treating end-of-life equipment – also need to be considered. Inappropriate handling of waste from electronic equipment [...] can have a detrimental effect on the environment and one’s health (Streicher-Porte et al, 2009, p.3499). Also during a Plan CEIBAL congress in Uruguay, teacher Herminia Azinian signaled XO

16 Regular ‘new’ PC are said to consume 70W when active in that same study.

laptops have a defined lifespan and “it should be checked what to do with them once they are no longer in use” (La República, 2009).

As summarized by De Bruyn, “developing nations require a bigger commitment of policy makers and a high technical capacity. They harbor some of the last untouched natural resources, and the environmental consequences of unchecked e-waste would be devastating” (De Bruyn, 2007).

The Pedal Charger: Energy as an Ecological Concern in Uruguay.

In the words of Gavin Bridge, energy is “the productive force at the heart of many economic, social and environmental changes associated with modernist transformation” (cited in Peet et al, 2011, p.307).

In Uruguay energy -especially electricity- is a great concern present in the lives of all citizens. The country obtains roughly 80% of its electricity from renewable sources (www.dne.gub.uy), mainly hydro-electric power coming from dams in the Rio Negro and Uruguay rivers¹⁷. The rest is imported from neighboring countries or generated with imported oil. The average consumption of electrical energy in Uruguay is 2400 KWh per year per person¹⁸ (World Bank, 2008).

Peak load for the electricity system occurs in winter¹⁹. The country must then rely heavily on oil, or buy energy in the spot market, at a high cost. Something similar occurs in times of drought, when hydro-electricity production decreases. This results in higher electricity costs for all citizens, as well as forced programmed power cuts –less common nowadays. Public information campaigns²⁰ are

¹⁷ The latter shared with Argentina, as it serves as the border between the two neighboring countries.

¹⁸ This is less than one third than the average consumption in Belgium.

¹⁹ In winter the days are shorter and electrical heaters are employed.

²⁰ These campaigns reach the whole population both with TV announcements and posters on the streets, bus stops and buses.

conducted to promote awareness and increase energy efficiency among Uruguayans. Environmental education in schools complements the campaigns, making children aware of the need to save energy²¹, in hope to also reach their families.

It was probably with these concerns in mind that, even when the XO laptops do not consume a lot of energy, children attending public school 224 in El Pinar²² looked for a way to charge their XO laptops without recurring to the electrical grid. Added to the Uruguayan concern on energy use, as mentioned above, they did not have enough electricity sockets to charge all laptops in school. Moreover, 224 is one of the twelve “sustainable schools”, project²³ for the “integrated and participative management in health, nutrition and environment in urban and rural schools with limited resources in Uruguay” (<http://www.ceadu.org.uy/ivoke-jey/>), which promotes environmentally friendly and ecologically compatible, sustainable practices²⁴.

Children did research on renewable sources of energy, using their XO laptops to surf the internet. Javier Garcia, parent of one student, came up with the idea of building a pedal charger and use mechanical energy to charge the laptops (Álvarez, 2009). This way, children would not rely on the

21" Didactical games and educational pamphlets are used for the awareness campaigns in schools.

22 El Pinar is a small seaside village, 30 kilometers from the Uruguayan capital of Montevideo. It is part of the Canelones department / region and also since 1994 part of the coastal area of Canelones known as “Ciudad de la Costa” or coastal city, a dormitory-city.

23 The “Ivoke Jey” project is conducted by the national NGO CEADU, supported by the Italian Cooperation. The name of the project means “regeneration” in Guarani –a language not spoken in Uruguay but which was spoken by the natives who inhabited the territory before colonization.

24" Main components of this Project are the natural treatment of water, organic gardens and environmental education.

school's electricity and could make more sustainable use of their XOs. The initiative appeared in national TV, newspapers and the OLPC website (Álvarez, 2009), seeking its replication²⁵.

What the Future May Bring: Concerns on XO's Breakage and Disposal

While energy is an important current concern in Uruguay, the final disposal and appropriate treatment of e-waste is not yet worrying Uruguayans. After all, it is not part of the Uruguayan culture to plan ahead of time²⁶, and it is only at this time that delivered laptops would start to reach the end of their lifespan.

What is already a concern is the sustainability of Plan CEIBAL as related to laptop breakage. 22% of the deployed laptops in Uruguay are not working (Capurro, 2010), most belonging to those from lower income families or who received laptops first (Warschauer, 2010). The Uruguayan government pays for fixing laptops when use is proper, and subsidizes repairs derived from user error (Warschauer, 2010). Parents need to pay the remaining 50% of the repair, and ship the laptop to the technicians, but do not always have the money, means or awareness²⁷ in order to do so (Capurro, Warschauer, 2010).

From the ten low-income families with XO laptops at home I interviewed in 2010, only two had fully functioning laptops. In others the rubber keyboard cover lacked keys or was entirely removed, only one side of a screen was functioning or the speakers were not working²⁸. Problems of computer or keyboard blockage²⁹ had occurred, but had been solved by the teachers in the schools. Only a couple of the parents knew of the toll-free number they can call to get technical assistance.

²⁵ I could not find information on whether or not this replication actually took place in other schools, but the initiative could easily be reproduced in the remaining few schools in rural areas which are not connected to the grid and rely on solar panels and small wind generators for electricity

²⁶ In my personal perception as a person who has lived there most of my life.

²⁷ Awareness of the importance of their children having a functioning laptop.

A lot of work is yet to be done to promote awareness of children and parents for solving the breakage of computers, which puts “the sustainability of CEIBAL at stake” (RAP CEIBAL, 2009). Also, given that computers have a limited lifespan and will at some point break for good, Uruguay needs to start thinking of ways to deal with the e-waste, in order to avoid future problems.

Beyond Schools: Plan CEIBAL in Uruguayan Households

Education authorities recognize they need to involve the parents in order to reduce laptop breakage. “The school with the lower breakage rate was [one] where we conducted an awareness workshop with the parents and before machines arrived” explained CEP advisor Oscar Gómez (Capurro, 2010). In fact, “involvement of the community is a mandatory condition for such programmes to be successful, nevertheless it remains often being neglected [as it] creates the necessary willingness to integrate the technology into everyday life” (Streicher-Porte et al, 2009, p.3499).

Integrating Families into Plan CEIBAL

As mentioned above, families are an important component of Plan CEIBAL, and included in the project’s long term objective of bridging the ‘digital divide’. The rationale:

“Improving a child’s competency in digital literacy and then having them bringing their interest and knowledge into the home could have more positive effects than exposing their parents directly to computers and the internet. If the goal is truly

28 Children and parents attributed the malfunction of speakers to the installation of a computer game called ‘Doom’, which was said to have a virus blocking all speakers. All families interviewed had their children attend an after school program for at risk children at a place called Rincón de Todos, where these children had probably passed the infected game to one another.

29 The XO laptops in Uruguay are automatically blocked if not connecting to a school’s network for over one month, as a way to assure attendance to class. In the summer, many students forget they need to go to the school at least once a month to keep computers functioning, and they often get blocked. Also in case of theft, a computer reported as stolen can be blocked, which makes XO theft an uncommon practice.

‘digital access for all,’ [...] parents who might otherwise be reluctant to embrace computers or the internet [are] more willing to do so when it means that their children could have a better education and, in turn, a chance at a better life (Klimaszewski & Nyce, 2009, p.233).

Children are therefore the ‘Trojan horse’ for computer technology to enter their homes (De Brower, n/d). But actual inclusion of family members is lacking. As signaled by Fernando, one of the parents I interviewed, “they did not explain anything; gave us the computer and, ‘deal with it! It is for the children, not for you’.” Nevertheless, other interviewed parents got a brief introduction to the XO when they received it³⁰. Parents are responsible for children making good use and taking care of their laptops, but this responsibility is not translated into further involvement.

How do parents react to this lack of involvement? Some choose to keep distance. Among the interviewees, that was the case with most mothers, like Lorena and María, who affirmed the computer “belongs to him [their child]”, and they [mothers] did not have enough knowledge to use them³¹.

Others find their way to participate, for example by volunteering for the project. Plan CEIBAL has a positive reception by the general public in Uruguay, where 84,1% believe it improves children’s future, and 69,5% justify the required monetary investment (Dominzain et al, 2009, pp.14-17). “What was a privilege in 2006 is a right in 2009” says project director Miguel Brechner, yielding support from the general public and making CEIBAL a flagship program of the current government³² (Trucano, 2009, September 18), one in which everyone wants to be involved.

30 XO’s were delivered not directly to children, but to their parents in school meetings. Parents needed to provide a copy of their ID and sign a paper which makes them responsible for paying 50% of all computer breakage due to user-error.

31 This is consistent with what is said in the Evaluation page of the CEIBAL website: “not all family members have used the XO and, among those who haven’t, 32% didn’t because they think it’s only for the child and 20% because they do not know how to use it” (Plan CEIBAL, 2009).

The need to organize voluntary contributions led to the creation of Red de Apoyo al Plan CEIBAL (known as RAP CEIBAL), the supporting network “to channel volunteer work, initiatives, suggestions and exchanges that are being generated in all the corners of the country [...] to contribute to the success of this great national project³³” (RAP CEIBAL, n/d).

RAP CEIBAL is not an initiative imposed from above, but resulting from members of the community and their willingness to help and take part on the project. It can therefore be considered as a grassroots movement. According to Sachs (2010), these differ from politicians and project planners “in their approach to the macro-dimensions of change. What essentially matters for them is to bring about, within the horizons with which they are familiar, changes which are both possible and meaningful to their own lives³⁴ (p.189).

This is important for the effective success of the project. In the words of Mosse (2005), “projects are made successful by social processes that disperse project agency [...] forge and maintain networks of support, and create a public audience for their drama of social transformation” (p.18). Grassroots movements are a great contribution, as projects and policies “seldom seem to be informed by the day-to-day experience of ordinary citizens whose lives the policy is intended to improve (Klimaszewski & Nyce, 2009, p.222).

32 Current Uruguayan President is José Mujica, the second president from the left coalition of political parties known as Frente Amplio; following CEIBAL’s creator Tabaré Vázquez.

33" RAP CEIBAL members may, for example, cooperate in the delivery of the computers, organize workshops and perform other tasks with parents and family members, develop technical aspects or help children when they first start using the laptops.

34" Sachs also explains replication or conformity to social norms or models elsewhere are not the main concerns of those involved in grassroots movements.

Parental Participation and the Pedal Charger

One member of RAP CEIBAL is Garcia, the father who came with the idea of the pedal charger. This may be perceived as the way Garcia found to get involved in CEIBAL, together with his child. In his own words, “it is unpayable what I’ve lived with these children. I hope we can replicate this experience where it’s necessary [...] I am available if anything comes up” (Garcia, 2009).

When asked whether he has patented the invention, Garcia says “of course it is patented, in the memory of all Uruguayan children. It is the best recognition I can receive” (Garcia, 2009).

As noted by Tachi (2004), it is important to combine rich local knowledges with action and experimentation [...] understanding how culture and creativity combined with new technologies can be a seedbed for innovation and enterprise [allowing development] according to participants’ needs and desires rather than our own agendas (pp.99-100).

Conclusion

The creation of a pedal charger for the XO laptops in a single public school may not seem relevant in a national project. Nevertheless, it is behind this creation, on the process that led to it, that we see the “complex relations of new technologies and organizations to existing communicative ecologies in each place” (Tachi, 2004, p.99).

Underlying the children’s concern about the energy consumption of the XO laptops is a country-wide preoccupation for electricity use, transmitted to children through environmental education and awareness campaigns in school, as well as through their families and the media. Behind the idea of a pedal charger is the father of one child, Javier Garcia, who found in this invention a way to get involved in Plan CEIBAL, a project that ‘includes’ him -and all family members of beneficiary children - in discourse, but not in practice.

The reality of the different places and peoples does not start with the implementation of a project. There was life before the project existed, one in which the beneficiaries already had their own concerns, and their ways to deal with them (Fairhead

& Leach, 2005, p.283). OLPC made the XO laptop energy-efficient and equipped it with a durable battery to make it functional in environments with no electricity grid. It even thought of the possibility of using solar energy for charging; but in Uruguay, children and their parents had other plans. The pedal charger is a result of that; one of the many “which were not foreseen by Plan Ceibal proponents when the program was being initially planned,” (Trucano, 2010) as it is often the case in the development world.

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Appendix

The XO Laptop

The XO laptop is the computer created by the OLPC Association. According to OLPC's institutional website, it is "a real world laptop for the real world change [...] durable, functional, energy-efficient, responsive, and fun" (<http://one.laptop.org>).

Recognizable by its white and apple-green colors, the XO is a laptop computer the size of a small textbook. Its design aims at durability: round edges, a rubber-membrane keyboard and 2mm-thick plastic walls (when the standard is 1.3mm). The display operates in dual mode: a full color transmissive and a black and white option – the latter being both reflective and readable at sunlight. This was thought for children who go to school outdoors or who spend a lot of time outside in sunny weather. The XO works with the Linux operating system and the Sugar desktop display.

A further development, the XO-1.5 is an "enhanced" XO laptop with 1GB of memory, a 1GHz processor and 4GB of Flash disk, but no hard disk. It also allows for expansion with both the SD-card slot and the three USB ports. It was launched in 2009, while a new XO-3 is expected to be produced in 2012.

Both the XO and the XO-1.5 come with built-in wireless broadband, which children can use, for example, to work in a mesh network³⁵. This way, they communicate with other children in their area when using the computer at home, and work or play together in a local area network.

³⁵ A mesh network is a network in which all nodes are interconnected, allowing them to serve as relays for one another. Information can then travel different ways, and is not interrupted if there is a problem in one of the nodes (which is known as a self-healing capability).