Technological Initiatives for Social Empowerment:
Design Experiments in Technology-Supported Youth Participation and Local Civic Engagement

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Abstract

Never in history has the world seen so much discrepancy in wealth, power and living conditions. Believing that information and communication technologies can help address this issue, governments and funding organizations have been investing in bringing computers and internet connectivity to underserved communities. Unfortunately, many of those initiatives end up privileging the community residents who were the most visible, literate or active, leaving behind those who would need additional support and reinforcing even more the status quo.

In order to foster a more democratic and participatory society, it is important to create initiatives that are more inclusive and empower individuals to control their own development. In this thesis, I propose a framework for the design and analysis of technological initiatives for social empowerment and I apply the framework in the implementation of two initiatives that focus primarily on youth participation and local civic engagement.

In the Young Activists Network initiative, I worked with youth technology centers from different parts of the world organizing young people to become agents of change in the places where they live. In spite of the localized successes, the Young Activists Network approach required so much effort from our partner community organizations and volunteers that it would be virtually impossible to sustain it over time and scale it to other sites.

Based on the lessons learned, I started the What's Up Lawrence project, an initiative that aimed at building a self-reinforcing, city-wide network to help young people in the organization of personally meaningful community events. In order to support such a network, I built What's Up, a neighborhood news system that combines the power of the telephone and of the web to make it easier for young people to share information, promote community events, and find out what is happening in their region.

This thesis provides a detailed description of these initiatives. It also highlights the main technical, educational and organizational elements that have to be considered in the implementation of technological initiatives for social empowerment and suggests the creation of a special organization to help in the adoption and refinement of such initiatives.

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1. Introduction

Between 1995 and 1999 I directed a non-profit organization in Brazil that built "computer and citizenship" schools in Sao Paulo slums. Our mission was to democratize access to the technology and, at the same time, help the new tools be used in ways that empowered people and fostered a more democratic society.

In order to do that, we received old computers donated by individuals and organizations, refurbished the machines and distributed them to partner community centers. We also provided teacher training to community representatives and tried to help in anything needed for the school's success.

Different from the more traditional community technology initiatives that focused primarily on providing computer access and teaching technical skills for the job market, we wanted our students to master the technology in ways that also contributed to improvements in their quality of life. For example, rather than merely teaching them how to open and edit a file using a text processor, we wanted local residents to learn how to use the technology to create invitations for parties, produce flyers and business cards, write petitions to the government, compare prices in local grocery stores, and focus more on things that were meaningful to them and to their communities.

Unfortunately, making good use of the computers proved to be much harder than distributing them. On the technical side, the tools were too complex and forced teachers to spend a lot of time helping their students, in many cases semi-literate, understand office-related concepts such as "files" and "directories" that did not make sense to the students and distracted the group from the more community-oriented focus of the class.

On the organizational side, it was virtually impossible to find a class schedule that fit the lives of the people who had two jobs or had to take care of family affairs. Moreover, the classes could enroll only 10 to 20 students at a time. While it was already hard enough for community teachers to manage a group that big, the total number of people attending was very limited vis-à-vis the size of the community. That not only limited the outreach

of the initiative, but also constrained the amount of money that the schools could raise in fees to become self-sustained.

To make things worse, with pressures of space, time and money, many of the schools tended to reduce the duration of the courses and focus even more on the technical aspects of the training. If our organization could not even maintain the 13 schools we had proudly constructed, how could we ever aim at reaching at to a larger fraction of the 1,900-plus slums that existed in Sao Paulo?

Although the challenges were daunting and important, I believed they could eventually be solved by constructing additional schools or fundraising from different sources. What really bothered me was the fact that even in the few schools that managed to create a space for social reflection, most of the ideas remained in the classroom and were never applied in the real world.

In my opinion, if we wanted to make an impact in the community, that was the major challenge we would have to address. In order to use technology as catalyst for better quality of life, we would have to search for an alternative approach that fit better into people's lives and culture, was more inclusive, could be scaled up and, above all, helped the community assume more control over its own development. With that in mind, I decided to go back to academia and try to find appropriate alternatives to the community technology model we used in Sao Paulo.

When I joined the MIT Media Lab in the summer of 2001, I had the opportunity to learn about technology trends, discuss educational concepts, and also to get involved with a range of initiatives that aimed at making a difference in the world.

In particular, as a member of the Lifelong Kindergarten research group, I participated in efforts associated with the Computer Clubhouse, an international network of after-school learning centers where young people from underserved communities learn about modern technologies in the process of developing projects that are personally meaningful to them.

At the Clubhouses, youth have access to high-end computers, multimedia design software, cameras, a sound recording studio and more. Rather than being forced to attend

classes, members can come to the Clubhouses whenever they want and stay for as long as they wish. Supported by mentors, at the Clubhouse young people engage in a culture in which creativity is valued and people are motivated to share ideas and learn from one another. To me, that approach seemed much more inclusive and respectful of people's lifestyles than the one I used in Brazil.

Things became clearer to me when, in early 2002, Prof. Mitchel Resnick came back from a visit to India and made a presentation about the initiatives being developed at Katha Khazana, a Computer Clubhouse located in one of the most underserved areas of New Delhi – a neighborhood where homes had no indoor plumbing, so that residents needed to collect water in containers at centralized locations and carry it back home.

In one of those initiatives, a 13 year old boy used the electronic microscope of the Clubhouse to analyze the quality of the water from different homes in the community. Surprised by the results, he and his friends started a campaign to educate local residents to boil the water before drinking. In a slide at the end of the presentation, the boy appeared smiling inside the little kitchen of his house proudly showing that his parents now boiled the water. Although not everybody in that community could afford to boil the water (since fuel was too expensive), at least people were more aware of the issue and could try to do something about it.

To me, that initiative was mind blowing. It showed me that, rather than talking to people about the uses of technology for social change and expect them to do something about it, we should perhaps abolish the lecture-orientation of our classes and, in the spirit of the Computer Clubhouse, be more active in supporting people in the actual implementation of their community projects.

The New Delhi initiative also opened my eyes to the incredible potential that young people have to contribute to their communities. Up until then, I had worked primarily with adults and had never really stopped to think about the way young people were segregated in society, or about how much everyone lost for not bringing youth to the discussion table.

The story of that young man in India inspired me to learn more about youth participation. The way I started seeing it, young people usually have the time, the energy, the will, the basic skills, and the right to participate and help improve the quality of life in the places where they live. What they lack is appropriate space, support and recognition.

In my opinion, community technology centers can be transformed to provide the basic technical and human resources to empower young people to become active and critical participants of their communities. The challenge is figuring out the kinds of technologies and support structures that those organizations would need for that to happen.

In this thesis, I propose a framework for the design and analysis of technological initiatives for social empowerment and I apply the framework in the implementation of two initiatives that focus primarily on youth participation and local civic engagement.

In the Young Activists Network initiative, we worked with youth technology centers from different parts of the world organizing young people to become agents of change in the places where they live. After two years trying different ideas, we realized that, in spite of the localized successes, the Young Activists Network approach required so much effort from our partner community organizations and volunteers that it would be virtually impossible to sustain it over time and scale it to other sites.

Based on the lessons learned from the Young Activists Network, in 2005 I started the What's Up Lawrence project, an initiative that aimed at building a self-reinforcing, community-wide network to help young people in the organization of community events. In order to support such a network, I built What's Up, a telephone- and web-based neighborhood news system specifically created to make it easier for young people to share information with one another, promote community events, and find out what was happening in the places where they lived.

At the end of the thesis, I reflect about the pros and cons of these two initiatives and propose the creation of a special organization and technologies to address the technical, organizational, cultural and methodological issues inherent to social empowerment.

Hopefully, the ideas contained here will serve as inspiration for other initiatives and, with that, contribute to the creation of a more democratic, meaningful and enjoyable world for children and adults from all parts.

1.1 Chapter organization

This document is organized as follows:

Chapter 1. Introduction describes the motivation and structure of this thesis.

Chapter 2. Background criticizes the traditional ways in which technology has been used to foster social development and highlights the importance of creating initiatives that focus on inclusion and community empowerment. The chapter also introduces the fields of "youth participation" and "educative cities", which served as the main theoretical references used in the implementation of the Young Activists Network and the What's Up Lawrence initiatives, respectively.

Chapter 3. Design Research explains the design-based research methodology used throughout the thesis, and defines the criteria adopted in the design and analysis of the technological initiatives for social empowerment described in the following chapters.

Chapter 4. The Young Activists Network initiative describes the guiding principles of the Young Activists Network and provides a detailed description and critical analysis of the three design experiments that constituted that initiative.

Chapter 5. The What's Up Lawrence initiative explains how the lessons from the Young Activists Network inspired the creation of a community-wide, network-based approach to social empowerment and the development of the What's Up system. The chapter also describes the design principles, the architecture and the operation of the What's Up system and provides a detailed narrative of the multiple attempts to implement the new approach using the system in Lawrence, MA.

Chapter 6. Conclusions discusses the major lessons from the Young Activists Network and the What's Up Lawrence initiatives, identifies guidelines for the design of socially empowering technologies and suggests the creation of a special kind of community organization to support the development of new initiatives.

2 Background

From a theoretical standpoint, this thesis has been inspired by ideas from the fields of "technology for social development", "youth participation", and "educative cities".

The section about "technology for social development" criticizes the ways in which technology is traditionally used to foster socio-economic development and highlights the importance of technological initiatives that are more inclusive and that aim at empowering not only individuals, but also the communities they are part of.

The section about "youth participation" highlights the importance of involving young people in the decisions that affect their lives and describes different ways in which technology can facilitate the implementation of youth-led, community-oriented projects.

Finally, the section about "educative cities" describes technologies and approaches that help unveil the learning potential of urban centers for young people.

As will be discussed in the upcoming chapters, while the Young Activists Network initiative has been inspired by the youth participation literature, the What's Up Lawrence initiative was based on ideas derived from the educative cities movement.

2.1 Technological initiatives for social development

Despite the unprecedented scientific and technological innovations of the past decades in areas such as agriculture, medicine and industry, never in the history of humanity have so many people had to survive suffering from chronic lack of food, basic services, or political recognition (World Bank. 2000; UNDP 2003).

The disparities are so big that, for instance, while the amount spent in cosmetics in countries such as the United States is larger then what would be required to provide the entire world with access to basic education (Crossette 1998), one fifth of earth's population has to live under $1 dollar per day and about half of the planet's children does not have access to potable water or sanitation (UNICEF 2002).

Overall, there is a strong belief that information and communication technologies can bring large contributions to the development process (UNDP 2001; Sciadas 2005). Based on this vision, governments and funding agencies are trying to reduce the gap between those who benefit from digital technologies and those who don't – the so-called Digital Divide. Efforts include adding technology to existing services in areas such as health, governance and education, and the creation of thousands of community technology centers that offer training and access to computers and Internet to many communities in need.

However, despite the large investments, the gap between rich and poor keeps growing in many parts of the world (UNICEF 2000; UNDP 2003) and the status quo has been maintained even in countries where digital technologies have reached out to larger parts of the population (Norris 2001).

In my opinion, although community technology initiatives have brought access to computers, connectivity and information to millions of people in need, the way in which many of those initiatives is structured tends to create a series of barriers that end up preventing participation and reinforcing existing power structures.

For instance, most approaches concentrate the computers in a central location – the community technology center, or telecenter – that offers some predefined services such as Internet access and technical training. In general, telecenters tend to operate in isolation from other community initiatives and, due to their physical location and hours of operation, are limited in terms of accessibility. That is particularly true for the most underserved, who tend to live far from the center or who have to work multiple shifts in order to provide for their families.

In addition to that, the tools available in telecenters do not necessarily fit the cultural values, priorities or even the level of literacy of local users (Beardon 2003; Sciadas 2003; Beardon 2004). In most cases, telecenters tend to use tools that have been designed for office-related environments and that utilize concepts such as files, folders and documents that may not be part of the user's daily life or vocabulary.

Although mastering the 'office-orientation' of technology can be perceived as a necessary step for professional development, few are the telecenters that can go beyond the technical training and provide users with the necessary social connections and complementary education necessary for them to get a job.

Unfortunately, for many of the community members who manage to get hired, the tendency is to leave the community and be closer to the job or better infrastructure. As a result, the community ends up losing some of its key members and telecenter initiatives end up serving more as sites for individual development and information consumption than catalysts for local knowledge production and community empowerment.

In order to foster more democratic and representative societies, it is important to create development initiatives that focus on local empowerment and go beyond traditional approaches to development that emphasize the mass deployment of technologies and services without necessarily paying much attention to the priorities of the communities served, the relative cost-benefit of the new tools, or to the kind of social connectivity and practical experience that is required for the marginalized to benefit from the information available and transform it into applicable knowledge (Sciadas, 2003). By emphasizing efficiency rather than quality, the traditional community technology initiatives end up privileging the individuals who are the most visible, literate or active, leaving behind the ones who are the most underserved and would need more support (Beardon 2003; Kumar and Best 2007).

To promote the kind of development defended by Nobel Laureate Amartya Sen, in which people are free to lead the lives they have reason to value (Sen 1999), it is important to break the barriers described above and create more appropriate community technology initiatives in which the emphasis is on the community and not on the technology. We should aim at initiatives in which people have ownership and use the tools to enhance things that are important to them without having to give up on their personal values or lifestyles (Morino Institute 2001; Resnick 2001; Chapman and Burd 2002; McNamara 2003; Warschauer 2003).

To some extent, this vision of socially inclusive and empowering community technology initiatives is already becoming feasible, at least from the technological standpoint. Recent developments in mobile, multimedia, mapping, and communication technologies are allowing more people to communicate and have access to the information world from wherever they are at any time. As technologies such as cell phones, geographic information systems, and cameras become more affordable and usable, they open up all sorts of possibilities for people to express themselves and socialize with one another. Likewise, new tools such as weblogs, wikis and news aggregators are making it possible for individuals to publish their thoughts to large audiences, collaborate with others across distance, and filter information according to personal interests. In a similar way, with the convergence between telephony and Internet, a person does not even need to be literate to create audio news or stories for others to listen through the Web. All she needs is a telephone and an account in one of the free audioblog services that are increasingly available online.

Technologies like the above have a tremendous potential to contribute to the development of more representative and inclusive societies. Indeed, with the support from the new tools, never in history have so many people been aware of the disparities of the world and never have as many individuals and organizations had such opportunity to connect with one another to refine ideas and build mutually supportive networks to challenge the status quo. The World Social Forum, Indymedia, the open-source movement, and the recent anti-war protests are some of the first examples of that (Caswell 2003; Hirsch and Henry 2005).

However, despite their success, it is important to keep in mind that those socially empowering initiatives are still far from becoming mainstream. In fact, one could even expect that the natural tendency would be for existing power structures to assimilate the new tools into their traditional practices and use the new technologies to outreach to even more people and locations without necessarily changing anything.

In order to foster more democratic societies, it is important to concentrate on initiatives that promote civic engagement, equity and development and provide those initiatives

with the appropriate tools and support structures to improve and sustain their work (Rheingold 2000; Putnam 2001; Putnam 2002). In some cases, this may involve helping existing organizations learn how to incorporate the new tools as part of their job. In other cases, this may require the development of new technologies and approaches.

One area of research that focuses on the development of more community-empowering technological initiatives is Social Constructionism (Shaw 1995; Shaw and Shaw 1999; Chesnais 2000; Pinkett 2002). Social Constructionism is based on Constructionism, an approach to education that believes that people learn better when they engage in the construction of something shareable (physical or virtual) that is meaningful to themselves or to their community (Papert 1993; Resnick 1994).

Traditional constructionist research focuses on the development of technologically-enhanced environments – the so-called microworlds – where users are provided with tools, materials and support to create and share things such as digital images, virtual spaces and interactive art.

Social Constructionism takes traditional constructionist research from its focus on individualistic, computer-oriented projects to a broader one that concentrates on the development of collaborative initiatives, not necessarily computerized, that aim at the betterment of the places and the communities people live in.

More specifically, social constructionists are concerned with the study and development of initiatives that engage people in the construction of personally meaningful things that enhance their social settings. By integrating personal and community development, social constructionist initiatives aim at generating an empowering cycle in which the activities of the individuals contribute to better communities that, in their turn, become more conducive to meaningful individual initiatives.

Social Constructionism argues that members of a social setting need specific tools, materials, and support structures to help them control and develop their social constructions (Shaw and Shaw 1999). Without those elements, individuals can be

reduced to functioning primarily as consumers of information and activities produced by others.

In particular, social constructionists believe that information and networking technologies have the potential to help people overcome the challenges of modern urban life and help neighbors connect once again with "the processes that bring them together with other members of their community to develop their community to its fullest potential." (Shaw and Shaw 1999).

Over the past couple of years, there have been several socio-constructionist technologies specifically designed to empower underserved communities. One of them was MUSIC (Multi-User Sessions in Community), a neighborhood-oriented network system that provided local residents with text, graphic and audio tools to support the organization of community activities in the real world (Morgan 1995; Shaw 1995; Shaw and Shaw 1999). Among other features, MUSIC provided its users with a shared bulletin board, an easy-to-use messaging system, a community surveys tool, and local community map that, when clicked, presented information about the people who lived in the specified location. Through MUSIC, local residents were able to reach out to one another, organize field trips for their children, and discuss solutions for common neighborhood problems such as a crime-watch initiative.

Another example of socio-constructionist technology for underserved communities was Creating Community Connections (C3), a web-based, community building system that, in the same spirit as MUSIC, provided mailing lists, forums, personal and organizational profile pages for local community residents to get to know more about one another, find out what was happening, and contribute to their community development. The C3 system was used in a comprehensive research project that happened between 2000 and 2001 in a housing development initiative in Boston, MA (Pinkett 2002; O'Bryant 2003). In addition to access to the C3 system, each family participating in the project received a new computer, software, high-speed Internet connection, and extensive technical training. Among other things, participants of the research ended up using the system to find out

information about jobs, organize local parties, meetings of the local resident association, and a community newsletter.

According to Pinkett (2002), the findings of the study included expanded local ties, increased awareness of community resources, improved communication and information flow at the housing development, and a positive shift of participant's attitudes of themselves as learners.

Despite their positive outcomes, the initiatives described above raised several points that need to be considered in the development of new socio-constructionist projects.

The first is that **the mere presence of connectivity and information does not necessarily enhance social engagement**.   As noticed by Pinkett in his conclusions, while many of the participants of his study ended up using the C3 system to resolve individual concerns, the few initiatives that used the system to contribute to the greater community good were led by residents who were already doing that before, i.e. the people who were more directly involved with the study organization and the management of the community development.

Instead of merely providing a generic information and communication infrastructure and expect that participants automatically start using the available tools for the purpose of community building, it is important that the social development goals of the technology initiative become very clear for all, that the initiative resonate with the lifestyles, skills and aspirations of its participants, and also that the initiative let its members actively engage with the broader community they are part of (Shaw 1995).

The second point to be considered is that **socio-constructionist projects tend require a lot of effort** from the coordinating team to make sure people feel motivated and supported enough to implement their community-enhancing projects (Chesnais 2000; O'Bryant 2006). Indeed, as pointed out by Pinkett, "tools do not spawn action, people spawn action" (Pinkett 2002, 279).

Unfortunately, although the socio-constructionist literature mentions that, for both MUSIC and C3 systems to be used, the coordinators of those initiatives had to offer

special training workshops, facilitate community discussions, and more, it is hard to get a clear sense of the kinds of support that were more effective and why.

Overall, the documentation available seems to focus much more on the attributes of the technology and its uses than on the underlying human infrastructure that actually gave life to the project. Sadly, once the research was over and the researchers left the site, the energy of the projects declined considerably. In this sense, it would be great to learn more about the key motivators for the project and devise ways to reduce the effort to make them happen.

A third point to be considered concerning the socio-constructionist examples described above has to do with the fact that both of them relied on **constant access to computers and the Internet** as a means to enhance community communication and interaction. Unfortunately, even though the number of computer users had increased tremendously over the past couple of years, the reality is that computer access is still not a reality for a large section of the population, especially in the most underserved areas. Moreover, creative and community-oriented computer and Internet usage still requires a level of investment in equipment, training, and ongoing support that is beyond the capacity of many community organizations.

As it is going to be explored in the present work, **perhaps modern telephony technology might represent a more accessible and viable alternative for the implementation of community development initiatives**. Among other things:

- telephones are already present in or within reach to most urban communities;

- telephones are already part of people's lives. People are used to talking through the phone and exchanging telephone numbers;

- telephones are easy to use and do not require any specific training or skills. The user does not even need to be fully literate: as long as she can speak, hear and type numbers, she should be able to use a telephone;

- telephones allow people to express themselves by voice and sound. They capture personal accents, the noises of the surrounding environment, intonations and other features that are representative of a specific context and that are hard to express via text-based media;

- telephones can be integrated with other Internet media (such as websites, blogs, email, podcasts) and allow for different kinds of interactions among individuals or groups.

In fact, the integration of telephony with Internet – also known as Voice over Internet Protocol (VoIP) technology – has been receiving increasing attention over the past couple of years (Horrigan and Hepner 2004). Examples include the spread of "free" telephony tools such as Skype, the creation of call centers for international customer support, the use of telephones to publish personal audio notes on the Web, the generation of automatic calls to inform people of changes in flight schedule, the organizing of phone conference calls, and others.

Besides those more personal and business-oriented applications, telephones can also be used to support community empowerment. In the early 90s, for instance, Paul Resnick and Mel King envisioned a telephone-accessible community information center complete with classified adds and a community scoreboard (Resnick, King et al. 1990). Although that particular system never ended up being implemented, variations of it have been created to support a calendar of anti-war events (Resnick 1994) and group collaboration (Resnick 1992).

More recent examples of VoIP for social empowerment include SpeakEasy, a VoIP system that provides volunteer guidance and language interpretation services to new immigrants (Hirsch and Liu 2004), and Community Voice Mail[1], a service that offers free voice mail to people in crisis connecting them to jobs, housing and support. In particular, Community Voice Mail provided thousands of voicemail numbers to facilitate

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[1] http://www.cvm.org/

communication among people displaced by the 2005 hurricanes that afflicted the United States.

Finally, it is important to realize that **the social-constructionist initiatives implemented so far focused primarily on the participation of adults** in community life. Although children-related concerns have been raised in several occasions (Shaw 1995; Shaw and Shaw 1999; Pinkett 2002), they have always been considered and addressed from the adult's perspective.

As it is going to be further explored in this work, a special emphasis should be placed into the development of technologies to foster youth participation. By providing youth with opportunities to learn about and be part of their communities, we contribute to their development as individuals, minimize the spreading effects of alienation at an earlier stage in life, and gain key allies in the use of technologies to promote more community involvement.

However, fostering youth participation is a non-trivial task and tends to require approaches, tools and support structures that are different from the ones used in the work with adults.

2.2 Youth participation

Although some may say that urban centers may provide citizens with all the support and diversity that one might need (Wirth 1928; Jacobs 1992), young people's experience of the urban space is becoming increasingly limited and passive. With the recent developments in telecommunication and transportation technologies, cities are growing more opaque, fragmented, and geographically dispersed. People tend to live far away from their jobs, products are developed in one place and commercialized in another, and many transactions are made through telephone and computer networks.

In many cases, especially in the most underserved areas, young people do not have the resources, the knowledge or the technical means to achieve the social connectivity and

physical mobility required for them to learn from and benefit from the opportunities available.

As a result, young people's exposure to the adult world and society tends to be constrained to the things they watch on TV, to the few places like malls and after-school centers that are considered safe and appropriate to them, or to the things presented to them in schools. In many ways, the reality presented to young people seems to be too complex, too far, too big, too expensive or too abstract for them to engage with. With the lack of opportunity to participate more actively in the processes that shape the dynamics of their lives and communities, there is natural tendency for personal frustration and civic alienation.

The notion that young people should be involved in the decisions that affect their lives has in the past decade increasingly attracted researchers and practitioners from a variety of fields. In particular, there is a growing belief that having youth and adults collaborating towards the solution of perceived community challenges provides rich and mutually reinforcing opportunities for the development of both individuals and communities (Hart 1997; Rajani 2000; Irby, Ferber et al. 2001).

In the last years, for instance, developmental and social psychologists started to shift their research framework from youth as people 'at risk' who need to be taken care of to a more positive approach in which young people are considered as important resources to be integrated, supported and recognized in matters that affect their communities (Cotterell 1996; Gottlieb and Sylvestre 1996; Tolman, Pittman et al. 2001).

Likewise, urban planners and community development agencies are also recognizing the contributions of youth in the design of better neighborhoods for young people and their families (Chawla 2002; Driskell 2002), civic activism agencies are going beyond the existing emphasis on community service towards a model that better integrates youth development (Mohamed and Wheeler 2001), and even more traditional organizations such as funding agencies are making the case for youth participation in their decision boards (Zeldin, McDaniel et al. 2000; Sherman 2003).

Finally, young people themselves are demanding more and more meaningful opportunities for engagement with their peers and the adult world. They respond to community programs that encourage them to take on responsibilities and empower them to make positive changes in society (Irby, Ferber et al. 2001; Barr Foundation 2002).

Although youth participation is starting to get recognition, the truth is that the area is still in its infancy and requires a lot of collaborative efforts and experimentation by all the interested parties in order to become a mature and well-established field (O'Donoghue, Kirshner et al. 2003).

Indeed, despite the formal recognition of the Declaration of the Rights of the Child (UNICEF 1990) by most countries of the world (the U.S. is the one major exception), society is still flooded with misleading myths about adolescence and the very concept of "youth participation" is still vague and abstract for most adults and young people.

In many cases, youth participation is limited to presentations or discussions without major incentives or support for further action. In other cases, youth participation tends to be confused with community service tasks such helping the elderly, collecting garbage from the streets, etc., that do not necessarily engage youth in social reflection (Percy-Smith and Malone 2001). As Cynthia Gibson pointed out, "volunteering in a soup kitchen is nice, but it is not enough. Young people must understand why there are soup kitchens in the first place and then take actions to address the structural systems that perpetuate poverty and other social problems" (as cited in Mohamed and Wheeler 2001).

In the perspective adopted in the present work, youth participation goes well beyond teaching lectures or asking young people to execute predefined community chores. It also goes beyond the traditional view of civic engagement as direct involvement with formal politics and includes those things that young people themselves consider political or civic in the context of their lives (Bell 2005). Youth participation is about empowering young people to do things that are personally meaningful to them and to their communities (Riger 1993). Youth participation is also about children and adults working together, respecting everyone's individuality, and benefiting from the contributions that each other has to offer.

According to the literature, one of the best ways to promote youth participation is by involving youth in participatory action-research projects in their communities (Hart 1997; Auriat, Miljeteig et al. 2001; Chawla 2002; Driskell 2002). In those projects, young people and adults collaboratively create maps and diagrams representing the places where they live, identify a common issue they would like to tackle, research causes, consequences and alternatives, do something to address the issue, reflect about the process and decide the next steps (Figure 1).
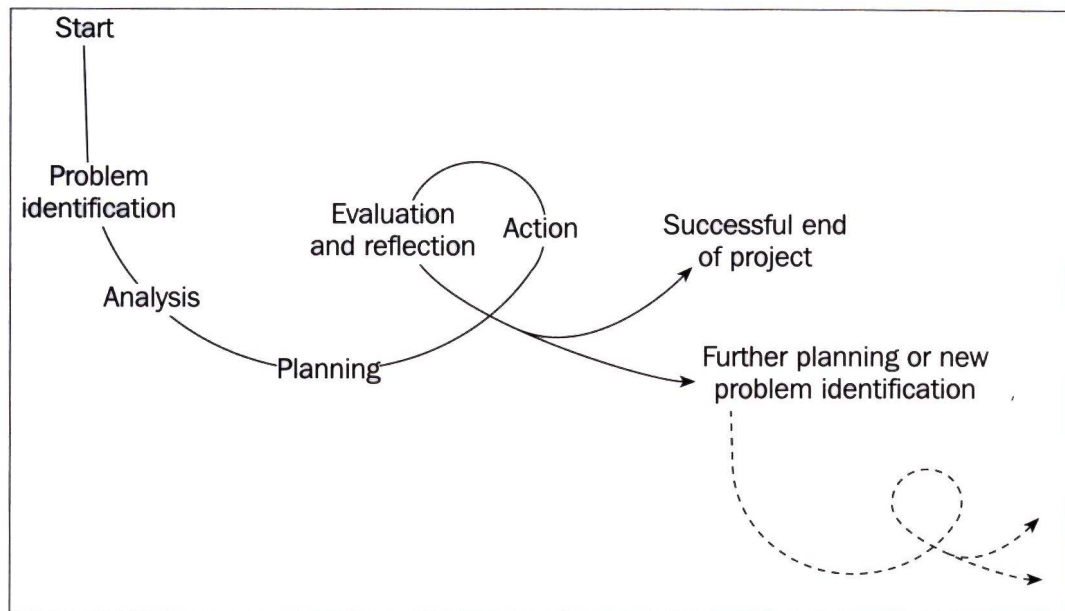
Figure 1 - The action-research lifecycle (Hart 1997, pg. 92)

The implementation of community projects with children requires the consideration of a series of inter-dependent variables including, among other things, the age and other specific characteristics of the children involved, the scope of the project, and the degree of control that young people are expected to have (Hart 1997). For instance, children younger than 7 may not yet have a fully developed capacity to understand the perspective of others, which is a basic competence required for social participation. However, they can still be involved in initiatives such as taking care of a domestic pet, decorating recycle bins for the street, doing vegetation surveys, etc., that focus on improving part of the environment. In contrast, around the ages of 10 to 12 children usually start to recognize differences in perspective, develop the notion of group, and improve their

sense of self and society. At this stage, they can be involved in larger projects at the community level such as managing the local garden, conducting surveys with experts or local residents, etc.

In general, younger children tend to require more guidance and support than older ones and adults. Nevertheless, community initiatives should provide appropriate opportunities for young people of all ages and capacities to voice their opinions, be heard and learn from the impact of their decisions. This way, young people are more likely to develop a critical understanding of how things work in society and grow up as active contributors for a more democratic world.

A central idea of this thesis is that modern technologies can help young people play a more active and critical role in their communities. Indeed, if one looks at what is happening today, there are many ways in which existing information and communication technologies can be used to foster youth participation:

a) by helping youth participation become more visible;

b) by providing alternative contexts for youth participation;

c) by serving as a pretext to involve young people in community matters;

d) by helping young people perceive their role in broader the community; and

e) by facilitating the implementation of youth-led social projects.

More visibility. Nowadays, by doing a simple web search on topics such as "youth participation", "civic engagement" or "children's rights" one has access to thousands of websites describing youth-related policies, organizations, issues, findings, discussions, projects, opportunities and much more. At websites such as UNICEF's Voices of Youth[2] or the World Bank's Youthink[3], for instance, young people from all over the world can

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[2] http://www.unicef.org/voy/

[3] http://youthink.worldbank.org/

find out more information about topics such as child rights, education, HIV/AIDS, media impact, sexual exploitation and the Millennium Development Goals; join discussion forums; play games; participate in polls; get ideas for projects and access step-by-step guides for social action. The range of what can be found on the web is so broad that there are even specialized initiatives like "The Free Child Project"[4] that serve as information warehouses with hundreds of links to organizations, references, surveys, and reports associated with the field.

Having information about youth participation online is likely to increase the visibility of the field, facilitate connections and foster the development of new initiatives. However, despite the large amount of information already available, youth participation still does not occupy a headline position in the media agenda and, unless one explicitly digs for it, it will remain buried underneath other more pressing or appealing topics. Moreover, to make things worst, most of the information about youth participation is still in English and only available online. As discussed in the previous section, a lot more still needs to be to make access to digital content more inclusive to audiences that may need it the most.

Alternative contexts. In addition to helping youth participation become more popular, information and communication technologies also help expand the range of venues through which young people can engage with society at large. Text messaging from cell phones, for instance, allows youth to overcome their personal lack of mobility and of unregulated space by providing them with an inexpensive, uncensored and boundless medium for communication with their peers (Ito and Okabe 2003). Likewise, as mentioned above, the Internet opens all sorts of possibilities for young people to know what is happening in different parts of the world, join groups who share their interests, broadcast their ideas to large audiences, and more.

One of the interesting things about cyberspace is that it allows young people to create new identities for themselves and gives them the opportunity to participate in a variety of

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[4] http://www.thefreechild.org/

things without necessarily having to reveal who they are or having to behave in a certain way. Popular websites like MySpace[5], for instance, provide millions of young people with a web page that they can personalize to show the things that they like and the people they connect to. As members of online services such as Neopets[6], Virtual Laguna Beach[7] or Teen Second Life[8], youth can even contribute to the creation of complex virtual worlds in which they have opportunity to come up with a digital representation of themselves, build and commercialize objects, construct virtual places to live, and interact with new people.

Although in some cases the freedom of identity and social interaction of the online world can be used to foster positive youth development (Bers and Chau 2006), in other cases it may result in serious privacy and security issues. In 2006, the fear of unknown adults contacting children led to the proposal of a special bill – the Deleting Online Predators Act[9] – to the United States House of Representatives suggesting that schools and public libraries limit youth access to chat rooms and certain social networking websites like MySpace.

However, according to some authors, those sites play important roles in young people's social development, compensating for the lack of mobility and access that youth currently have by providing young people with a less structured and less controlled space that they can use to hang out with their friends, acquire complex skills, make sense of culture, and simply be themselves. Cutting young people off their online communities would further children isolation and contribute even more towards their social alienation (boyd 2006; boyd and Jenkins 2006; Ito and Horst 2006).

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[5] http://www.myspace.com/

[6] http://www.neopets.com/

[7] http://www.vlb.mtv.com/

[8] http://teen.secondlife.com/

[9] http://en.wikipedia.org/wiki/Deleting_Online_Predators_Act_of_2006

Unfortunately, not even in cyberspace young people are totally free to be themselves. In Nicktropolis[10], for instance, a virtual-world developed by Nickelodeon, youth can only interact with one another using a predefined set of words and ready-made phrases that are considered safe for them.

In my opinion, the important point is that young people are losing their space in the real world and are trying to compensate for that with the tools that they have at hand. One way or another, digital technologies already play a central role in society and it does not make sense to try to remove them from young people's lives. Perhaps what should be done is to help adults understand young people's motivations to be part of society, recognize the pros and cons of modern technologies for democratic social development, and use them to create better and more inclusive opportunities for young people to participate in the combination of virtual and non-virtual settings that comprise their world.

Involvement in community affairs. A third way in which modern technologies can contribute to foster youth participation is by serving as a pretext or motivator to draw young people to certain socially- or politically-oriented topics that they might not be attracted to otherwise. That is the case of community initiatives like, for instance, the Committee for Democratization of Information Technologies[11], which embeds the discussion of locally-relevant themes such as health, rights, basic education in its computer training courses.

An alternative approach that is becoming more popular is the creation of games and interactive simulations to help people become more aware of how different issues affect their lives. In the Gothan Gazette[12], a website about issues facing New York City, youth and adults can play with the city budget, plan a park, understand the different systems that keep the city running, and more.

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[10] http://www.nicktropolis.com/

[11] http://www.cdi.org.br/

[12] http://www.gothangazette.com/

Another example is "Food Force"[13], an interactive computer game created by the World Food Programme of the United Nations. As part of the game, young players learn about world hunger by joining an emergency relief team fighting a hunger crisis in the fictitious island of Sheylan. As part of their mission, young people have to help in the initial crisis assessment; create balanced diets under limited budgets; pilot helicopters; negotiate with armed rebels blocking a food convoy; and use food aid to help rebuild communities.

With over 4 million copies downloaded in the first year since its release, Food Force is part of increasing group of humanitarian games that help people understand complex issues such as the Palestinian peace-making process[14], life in refugee camps[15], community organizing[16], non-violent conflict resolution[17] or farming in poor regions[18].

The games are excellent learning resources that are both engaging and full of detail. However, even though those games are the result of extensive research and real life experiences, there is still a big difference between what players experience on the screen and what they can do in the non-fictitious world. In order to minimize this gap, the games themselves or their websites usually include links to lesson plans, news and organizations related to the game's core themes, and also lists with suggestions for how to get involved. Still, a conscious effort should be made to make sure the players have opportunity to reflect about the reality behind the game and incorporate the lessons learned in their lives.

It is interesting to notice that, while on the one hand games like the above are becoming closer to reality, on the other hand there are many instances in which reality itself is assuming the attributes of a game. For instance, simple mouse clicks in the "Give Free

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[13] http://www.food-force.com/

[14] http://www.seriousgames.dk/gc.html

[15] http://www.darfurisdying.com/

[16] http://www.organizinggame.org/

[17] http://www.afmpgame.com/

[18] http://www.heavygames.com/3rdworldfarmer/showgame.asp

Food" button of The Hunger Site website[19] provides cups of staple food for the hungry around the world. Selecting the "loan now" option on the Kiva page[20] allows one to provide micro loans to small businesses in developing countries. Likewise, adding your name to an email campaign organized by MoveOn[21] may contribute to the acceptance of specific political agendas.

At the same time as the Internet provides individuals with the incredible power of making a difference in the world at the convenience of one's keyboard, it is important to realize that the quality of the experience of contributing to a pre-defined cause at a distance is very different from going out and organizing a personally meaningful campaign on the streets.

Group power. As it is going to be discussed in the following chapters, engaging young people in local action projects provides them with a meaningful context to learn from the impact of their actions, find out about how decisions are made, and develop a critical understanding and appreciation about the places where they live.

Unfortunately, due to long distances and the complexities of urban life, sometimes it is hard for young people to visualize themselves as a group and get a sense of how powerful they can be if they work together in an organized way. Although statistical surveys can be used to represent youth opinion, numbers tend to be abstract for youth and make it difficult for young people to see how they contribute to the larger community.

According to Noveck (2006), virtual worlds such as Second Life can provide people with spaces where they can get together as a group independent of individual location, organize events to discuss particular issues, reach out to others for ideas and support, get a more personal feeling for their community size, and mobilize themselves without losing their individuality or being judged by the way they are perceived in the real world.

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[19] http://www.thehungersite.org/

[20] http://www.kiva.org/

[21] http://www.moveon.org/

In fact, some organizations are trying to benefit from the attributes of virtual spaces to bring youth together around issues that are meaningful to them. For instance, since February 2006 Global Kids has been using its "island" in Teen Second Life to promote events with UNICEF and other international organizations to educate and foster discussions about HIV/AIDS, education, health, exploitation, abuse and other relevant topics.

However, despite of the possibilities, much still needs to be done for new technologies to make it possible for groups – small and large – to take action and be able to bring the power they have in cyberspace to the world of atoms.

Youth-led, local social change. One organization that is trying to use cyberspace to foster youth-led social change in the real world is TakingITGlobal[22], an international web-based initiative specifically created to help young people connect with one another and find the necessary resources to take action in their local and global communities. Among other things, as part of TakingITGlobal, young people can publish personal and organizational profiles, search for people who share similar interests, and obtain online space for their projects. Each project listed in the TakingITGlobal directory includes, among other things, a mailing list, a discussion forum, a shared file space, a progress report log, and a photo album. The website also has a global calendar of events, information about different countries and even links to funding organizations.

As of January 2007, the TakingITGlobal website had over 130,000 registered users with over 2,000 projects from more than 160 countries. Although TakingITGlobal is doing extremely well at the global level, the initiative is receiving a large demand by its membership to provide more support and programming at the local level. As described in the website, "our services are only as relevant as they are accessible to people in languages they speak, and through a format they can access, and implementing programs

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[22] www.takingitglobal.org

to bridge the gap between the online tools and offline work will play a critical part in increasing the effectiveness of the TIG network"[23].

Unfortunately, there is an overall lack of studies highlighting how information and communication technologies can be used to support youth participation, especially in what refers to young people's engagement with their local communities (Bell 2005; Bers and Chau 2006).

On the few references that I found, there were important differences in the roles played by young people, the tools that were used and the kinds of support that were provided. In the Detroit Community Initiative's Future Leaders GIS Youth Corps (WSU 2003; Corley 2005), for instance, young people received training in geographic information systems (GIS) and portable computing technologies to collect data on neighborhood housing and environmental conditions. Although this initiative provided local young people with a good opportunity to interact with university students, become aware of different aspects of their neighborhood and learn about technology and urban planning, the actual planning of the initiative and analysis of the results were developed by the adult organizers of the project.

In the Placeworxs project (Ramasubramanian and Ali 2004), the goal was to create opportunities for youth to participate in neighborhood and community planning processes. As part of the project, youth 13 to 21 years old worked in small groups to develop proposals to address a planning issue they were concerned about. Through this process, they ended up developing a better understanding of the dynamic relationships between people and place, and learned to user the computer to create presentations, posters and other materials for their projects. Indeed, the authors highlight that the use of digital photography and software programs helped the young participants articulate their opinions and allowed them to connect their experience with that of others in the community. The authors also emphasized that the success of the project was a direct result of the support provided for youth to take the lead on the educational agenda of the

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[23] http://about.takingitglobal.org/d/programs/local

initiative itself and of the flexibility of the organizers to adapt to the young people's demands.

Finally, in the Gardner Center's Youth Engaged in Learning and Leadership (YELL) project (Penuel, Gray et al. 2004), youth members and adult staff from a partner youth organization collaborated with the researchers in making the decisions for introducing technologies in their neighborhood-oriented programs. According to the authors, new technologies can be disruptive to programs when they are first introduced, and staff tends to get frustrated if they do not get adequate support to learn more about the tools or to design activities that use the technology in meaningful ways. However, the proper use of appropriate technologies can increase opportunities for youth to assume more ownership over their projects.

In the example described in the article, youth used handhelds and a combination of software specifically designed to facilitate the collection and analysis of survey data. This way, rather than having to spend time typing information into the computer or waiting for adults to compile the survey results, young people themselves could manipulate the data and develop deeper understandings of their meaning. That initiative demonstrated that technology can be an effective tool to engage youth in authentic activities. Nevertheless, "ensuring that technology plays a useful role within a youth development program […] is a difficult task. It requires careful attention to designing authentic tasks, a willingness to reflect critically on unsuccessful aspects of technology implementation, and careful planning for sustainability" (pg. 7).

In my opinion, local community organizations can play an important role in helping young people connect better with the places where they live. However, despite the increasing number of youth organizations that started incorporating cameras, mapping tools and media production software as part of their activities there seems to exist a distance between what those tools can offer and what the youth organizations require in order to doing their work. The references and experiences described above highlight some of the things to be considered, but much more needs to be done in order to take

technology-supported youth participation from punctual research initiatives to commonly adopted practices. It is my hope that this thesis may contribute to that process.

2.3 Educative cities

This thesis has also been influenced by the "educative city" initiative, which aims at making the latent learning opportunities of urban centers more explicit and conducive for young people's free explorations (Carr and Lynch 1968; Southworth 1970; Southworth 1988).

As suggested by Carr and Lynch (1968), the urban environment plays a key role in supporting the development of individuals. The city is "is a medium for transmitting the form and content of contemporary society, a territory to be explored, and a setting for the testing of identity. With the attrition of family function and the waning influence of tradition and authority, the individual seeks identity through his own experience. He must make himself in choice and action, and he must do so, by and large, in the urban environment." (pg. 1280).

According to the educative cities proponents, there are several elements that can be manipulated to increase the educative effectiveness of the city. Among others, they suggest the creation of special transportation systems, maps, trails, activities and guided tours to help children explore and become exposed to different aspects (economical, historical, cultural, environmental) of city life (Carr and Lynch 1968; Southworth 1970; Southworth and Zien 1971; Southworth and Southworth 1981; Southworth 1988; Southworth, Southworth et al. 1990). In particular, some recommend the placement of appropriate public signing as an economical and effective way of increasing the informativeness and navigability of the urban environment for children and adults (Southworth and Southworth 1981; Southworth 1988).

Some authors even suggest that special multimedia kiosks and audio devices could be used to enhance the city experience for children and youth. Unfortunately, perhaps due to lack of technological infrastructure at the time, those ideas never ended up being implemented.

Today, however, there are several projects that aim at creating technological infrastructures to help youth explore and document the world outside their homes and schools (Druin and Hourcade 2005).

In the Ambient Wood project (Rogers, Stanton et al. 2004; Rogers, Price et al. 2005), for instance, children use a combination of electronic probes and mobile tools to do scientific explorations of an outdoor woodland environment that had been previously enhanced with a wireless network of sensors, displays and speakers created to 'digitally augment' the youth experience of the area.

In the New Sense of Place project (Williams, Jones et al. 2003; Williams, Jones et al. 2005), rather than experiencing digital information already prepared for educational purposes, young people are placed in the role of content producers and can use a combination of handheld computers, location sensors and headphones to create and leave sound messages (or 'soundscapes') around in the city for others to explore.

In the Yellow Arrow project[24], participants decorate the streets with yellow arrow-shaped stickers pointing to the elements they want to highlight. These can range from a favorite view of the city, a local bar, or an odd fire hydrant. Participants then update Yellow Arrow's database by sending a text message from their mobile phone to the unique identification number written in their yellow arrow sticker. When another person encounters the arrow, he or she can query the Yellow Arrow system by calling the arrow number and receiving all text messages originally associated with the arrow. Through this location-based exchange of text-messages, the idea is to highlight the unique characteristics, personal histories, and hidden secrets of everyday spaces.

A last example is the eBag system (Brodersen, Christensen et al. 2005), which aims at making it easier for youth to collaboratively handle electronic materials collected anywhere with a variety of devices such as computers, smart boards, cell phones, cameras and the like.

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[24] http://www.yellowarrow.org/

Although technologies like the ones described above can potentially facilitate free youth exploration and the development of community-oriented projects, it is not very clear that they will ever become available to the ones who would need them the most. Moreover, similar to what happened to other technologies, depending on how they are used the new tools may contribute even more to increase control over young people or to transform the world into a classroom that enforces predefined perspectives and inhibits self-initiative. The final outcome will really depend on the emphasis given by the initiative itself.

Even today, despite all the advances in technology, very few websites and services have been created to provide information for children, and a more comprehensive technological support for the implementation of educative cities has yet to become reality.

In general, the Educative Cities approach is refreshing in the sense that it liberates youth to explore the urban space on their own, without depending too much on a particular youth organization or adult group to be with them at all times.

However, despite the literature saying that educative cities should provide youth with opportunities to experiment with different societal roles and have a say in the project (Carr and Lynch 1968; Southworth 1970), in practice most of the attempts to implement educative cities have been led by adults and focused more on increasing children's exposure to the physical environment rather then on helping them understand and contribute to the different socio, cultural and political elements that permeate the urban space.

Indeed, it is interesting to notice that many of the initiatives that aim at creating better cities for children and youth have a tendency to keep child-participation as a lower-priority item in their strategies. For instance, The Population Connection's rank of best "kid friendly cities"[25] and "kid friendly countries"[26], focuses on different population,

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[25] http://www.kidfriendlycities.org/

[26] http://www.kidfriendlycountries.org/

health, environment, education and economic statistics and does not even consider degree of youth participation in its analysis.

The same seems to be true even for UNICEF's Child Friendly Cities Initiative[27], which works with governments and partner organizations from all over the world in the creation of cities where the rights of children are an integral part of public policies, programs and decisions (Riggio 2002). Although children participation is a key element in the Child Friendly Cities Initiative, its actual implementation really depends on government's interests and sometimes requires pressures from young people and youth groups to become a priority (Racelis and Aguirre 2002).

According to Southworth (1970), youth participation in urban planning requires that child-oriented initiatives become more decentralized so that they open up more possibilities for young people to join in and have an effective voice.

If the goal is to create more engaging and empowering cities for youth, a stronger emphasis should be placed on creating appropriate organizations and networks to support and inspire young people in their community projects.

This is one of the main objectives of the different initiatives described in this thesis.

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[27] http://www.childfriendlycities.org/

3. Research design

The concept of "social development" adopted in this work is akin to the notion of "empowerment" as defined by "empowerment theory", an area of community psychology that has been receiving increasing attention since the early 1980s.

According to empowerment theory, an empowered community is proactive in efforts to improve its own quality of life and provides opportunities for its members to gain mastery over issues of concern to them. Among other things, an empowered community is comprised by settings for citizen involvement, accessible resources (recreational facilities, health care, media channels, services) and an open governmental system with strong leadership (Israel, Checkoway et al. 1994; Zimmerman 2000).

Empowered communities are directly dependent upon and should nourish the development of empowered individuals, i.e. people who are capable of making decisions, have control over their own life, and are actively involved in initiatives that influence their environment.

By attaching 'active engagement' as one of the essential attributes of empowerment, the theory attempts to make sure that initiatives that describe themselves as 'empowering' go beyond providing the mere feeling of empowerment that is so common in schools or other educational institutions and help individuals actually do things that are important to them and have a voice in their communities (Riger 1993).

Empowered communities are also comprised of well-connected organizations that are both "empowering" and "empowered". The first has to do with organizations that provide their members with opportunities to develop skills, assume multiple roles and participate in the decision-making process. The second has more to do with the ability of the organization to compete for resources, network with other organizations, and expand its influence (Riger 1993; Israel, Checkoway et al. 1994; Zimmerman 1995; Zimmerman 2000).

All too often organizations such as neighborhood associations help people get a sense of empowerment without necessarily getting more powerful as an organization over time. However, if those organizations do not manage to have a presence in the larger sociopolitical context, they may be doomed to transitory or ineffective actions (Riger 1993).

In this thesis, I defend the idea that youth technology centers can play a key role in helping empower young people in relationship to their communities. However, as discussed in the previous chapter, the mere access to technology does not necessarily help people connect better with the places where they live.

If youth participation and local civic engagement result from learning initiatives that provide opportunities for young people to be exposed to different aspects of community life and try out their own ideas, then the effectiveness of empowering technology initiatives will depend on the extent that they support young people in the implementation of their community-oriented projects.

Unfortunately, providing the appropriate support for youth participation poses a series of methodological and technical challenges to youth technology centers. The goal of this thesis is to identify the most important of those challenges and propose viable alternatives to them.

3.1 Research goals

This thesis focuses on the design of technology-supported initiatives that foster youth participation and local civic engagement.

More specifically, I am interested in the following research questions:

- What are the main attributes of learning initiatives that foster youth participation and local civic engagement?

- How can digital technologies support the implementation of those learning initiatives in youth technology centers?

- What attributes should digital technologies have in order to become more suitable for that task?

- What other factors have to be in place, besides the technology, for those initiatives to succeed?

When I refer to "youth participation and local civic engagement," I mean the active and critical participation of young people in matters that affect the places where they live. Ideally, I would like to identify the basic elements of initiatives that help young people learn about how things work in their neighborhood, benefit from the opportunities available, and contribute in meaningful ways to the greater good of their communities.

In this sense, as discussed in the previous chapter, my understanding of "civic engagement and participation" is akin to the definition of "individual empowerment" as defined by empowerment theory and, if applied to young people, is also akin to the definition of "youth participation" as discussed in the background chapter.

In particular, I believe the fields of "youth participation" and "empowerment theory" can be self-reinforcing and complementary to one another. While empowerment theory provides an interesting framework that can be used to situate youth participation in relationship to adult, organization and community empowerment, the youth participation research field can help empowerment theorists understand the developmental, the environmental, and the other key elements that play a role in helping young people become active and critical participants of society.

In this thesis, unless otherwise specified, the terms "youth participation", "civic engagement" and "empowerment" will be used in interchangeable ways to refer to the ability of individuals to become aware of and become actively and critically involved with matters that affect their lives.

When I refer to "local", I understand the "neighborhood" or, more broadly, the different streets and city areas where young people spend their lives. To some extent, the neighborhood is the first space outside the house or youth organization in which young

people have opportunity to interact with the broader community in a less-controlled or less-mediated way.

By focusing on young people's neighborhoods, civically engaging initiatives start with spaces that are already potentially accessible and familiar to youth and, with that, create opportunities for young people to contribute with their personal experience and become more involved with the different aspects of the project. Moreover, the neighborhood seems to constitute an appropriate scope for the intended initiatives, providing a context that is at the same time small enough to help young people learn from the impact of their actions, and big enough to expose them to different people, values and resources that are available to them. Finally, by concentrating on the neighborhood, initiatives can help youth regain and contribute to a space that also belongs to them and increase the recognition of young people's ideas by the other members of the community.

When I refer to "youth technology centers," I mean the community centers, libraries, telecenters, school labs and other spaces in which young people can use computers for open-ended and personally relevant activities.

I am particularly interested in those centers for a number of reasons. The first and most obvious is that youth technology centers already offer a minimum of technology and technical support that, at least in theory, can be used for community-related initiatives. The second is that youth technology centers tend to have more flexibility in terms of schedule, membership and curriculum than formal schools, which makes them more suitable for the implementation of the longer-term, multi-age, interdisciplinary projects associated with community participation. In addition to that, perhaps because they are a loosely defined combination of community organization, after-school center, and computer lab, youth technology centers often end up playing the role of 'intermediary spaces' (Noam, Biancarosa et al. 2003) that bridge the lives of individuals, families, schools, work, and other organizations.

To sum up, as discussed in the previous chapter, nowadays there is a large interest from governments and funding organizations in using modern technologies to foster community development. I believe that this positive political interest, together with the

infrastructure already in place and the lessons learned from existing community technology initiatives, plus the potential opened by new technologies, comprise an unique opportunity to compensate for the challenges faced by young people in modern cities and build a much more inclusive, empowering and engaging society with and for them. That is why I decided to focus this research on the intersection of those different areas.

3.2 Research approach

In order to explore the research questions listed in the previous section, this thesis follows a "design-based research" approach (a.k.a. "design experimentation" or, more simply, "design research" approach), which is an inter-disciplinary methodology specifically created to study innovation, often including new technologies, in real-life educational settings such as classrooms, after-school programs, computer-supported collaborative learning environments and others (Brown 1992; Hoadley 2002; Cobb, Confrey et al. 2003; DBRC and Collective 2003; Collins, Joseph et al. 2004; Joseph 2004; Sandoval and Bell 2004).

Within this approach, researchers collaborate with educators in the design and study of innovative interventions – the so-called "design experiments". Those experiments start with a set of pre-defined conceptual principles that are then constantly assessed and refined in evolving cycles of theory generation and practice improvement. The lessons and challenges from one phase inform the principles and organization of the next phase and the process keeps evolving in a self-directing way until all the major questions have been addressed. As described by Cobb et al., "one of the distinctive characteristics of the design experiment methodology is that the research team deepens its understanding of the phenomenon under investigation while the experiment is in progress." (2003, pg. 12).

The iterative development process of design experiments compensates for some of the drawbacks of more traditional, laboratory-based education research making it easier, for instance, to reconfigure the experiment based on the sometimes unpredictable, emergent student behaviors, and also to devise new learning theories that are more directly applicable to realistic situations.

The narratives produced as a result of design experiments also tend to provide important contextual clues about how the ideas evolved over time and how different design aspects should be considered in different settings. As pointed by Hoadley (2002), all too often technology-oriented studies present the tools being tested as fully-formed entities, providing little background about how they came to be and the processes that shaped their development.

Despite the potential advantages, design experiments are likely to generate extremely large and complex amounts of data to be analyzed, and sometimes the lessons learned in a particular context, although valuable for the situation at hand, may not necessarily be valid across settings. In order to address those challenges, design researchers have to be very specific about the perspectives considered in the experiments and clarify the influence of contextual factors in the development of their work.

In the present work, I started the design research process with the implementation of the Young Activists Network (YAN) initiative. In the first YAN attempt, I tried to implement a traditional approach to civic engagement – participatory action research with children – using the resources and the organizational structures that were already in place in the youth technology organizations that we partnered with. The idea was to learn as much as possible from what worked – or did not work – in already-existing organizations and only then start implementing changes.

In the end, the Young Activists Network evolved through a series of three design iterations or attempts that ranged from 3 to 9 months each (Figure 2). The YAN experiment led me to think about the roles of technology in youth participation and helped me organize the discussion about that topic in the background chapter. The lessons learned from the Young Activists Network also led me to the implementation of another enterprise, the What's Up Lawrence initiative, which already evolved through two major design iterations and is still under development.
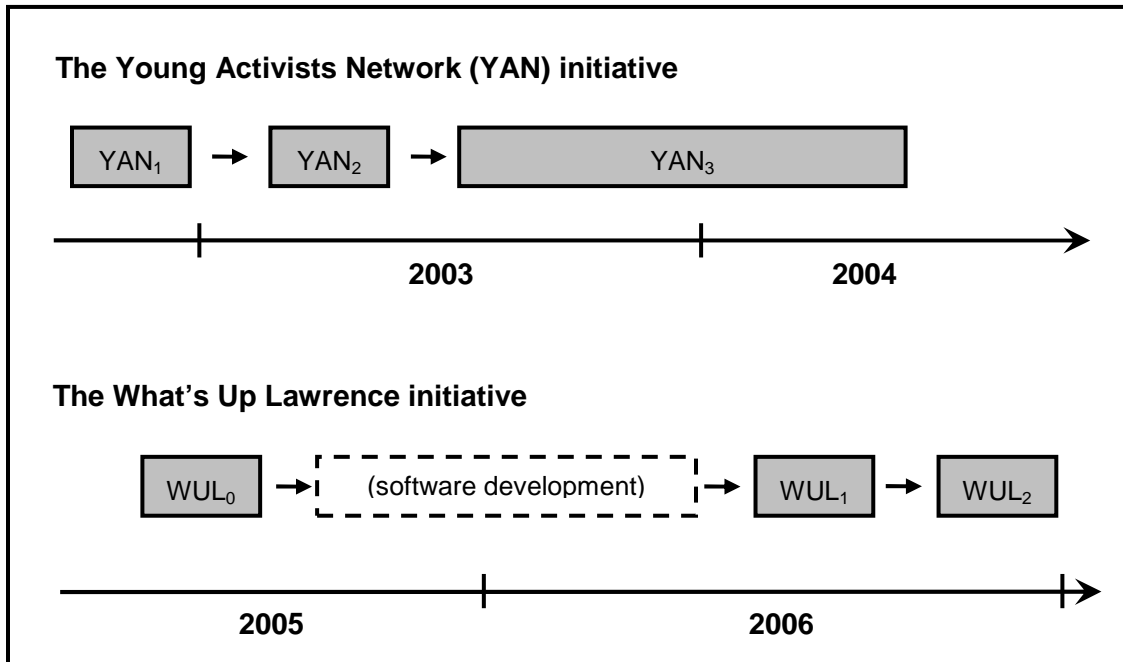
Figure 2 - Design experiments developed during the thesis

Rather than a merely observing what happened, I became directly involved with the actual implementation of the initiatives mentioned above, working side-by-side with the practitioners and young people at the youth technology centers, trying out new ideas and incorporating the participant's feedback into the research development cycles. In most cases, I was physically present at the actual sessions of the project. In others, I maintained contact with the organizers through email, telephone, shared web-based notes and special meetings.

Each of the design iterations has been analyzed through a collection of socio, cultural and organizational attributes that affected the technology usage and the implementation of the initiative. Those attributes are described in detail in the next section.

Following the suggestions proposed by Collins, Joseph et al. (2004), each phase of the above-mentioned experiments is presented with their goals, development, challenges and lessons learned.

3.3 Criteria for the design and analysis of technological initiatives for social empowerment

This section builds on the discussions of Chapter 2 and of the previous section. It provides a detailed description of the different aspects that have to be considered in the design and analysis of technology-supported initiatives for social empowerment. It should be noticed that those attributes not only helped define important aspects of the Young Activists Network and the What's Up Lawrence initiatives; the attributes themselves have been refined with the development of those initiatives.

According to Collins, Joseph et al. (2004), the attributes used in the analysis of design experiments should be characterized in terms of "independent variables", i.e. the contextual elements that may affect the outcome of the experiment, and "dependent variables", i.e. the elements that can be used to actually define the success or failure of the experiment.

In the proposed framework, the independent variables have been organized in two main categories: the "approach variables" that describe the activities to be implemented, and the "settings variables" that describe the location where those activities are going to happen. In a similar way, the dependent variables have also been organized into three larger categories: the "empowerment variables" which relate to expected outcome of the initiative on individuals, organizations, and the community as a whole; the "climate variables", that help characterize how the activities evolve over time; and, finally, the "system variables", which concern the replication and sustainability of the initiative as a whole.

In a simplified way, the design experiments described in this thesis can be understood as attempts to implement a given approach, or a set of predefined activities, on a specific setting, in this case, a youth technology center (Figure 3). Hopefully, the execution of the approach will activate climate variables such as engagement, participation, outreach and technology usage to the expected levels and with that, generate the desired empowerment-related outcomes. In case something unexpected happens, the approach is modified and a new attempt is implemented.
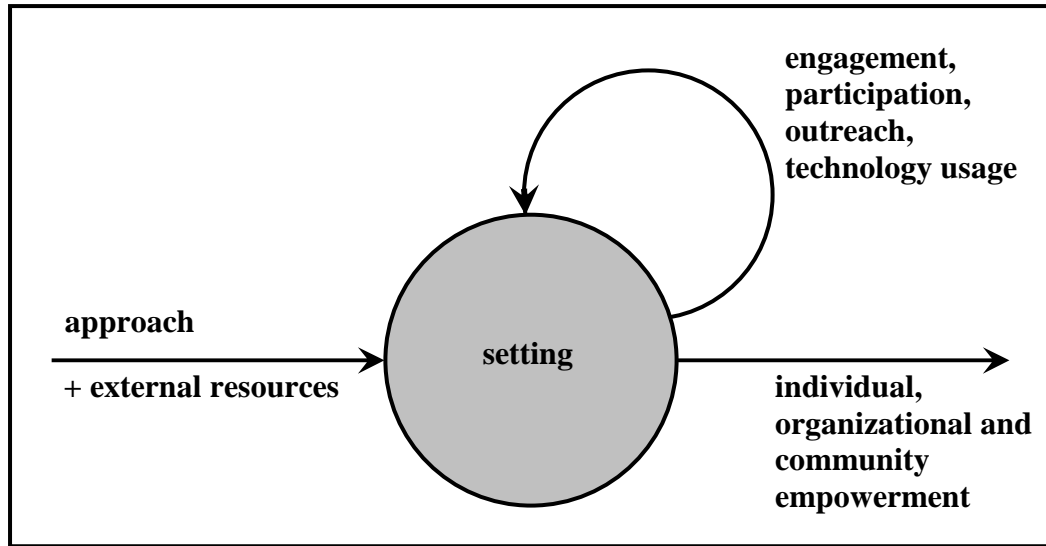
Figure 3 - Variables analyzed in the proposed approach

Table 1 summarizes the main variables to be considered in the design and analysis of technological initiatives for social empowerment. Those variables are described in detail below.

Approach variables. The following are the main variables or attributes that have to be considered when designing or analyzing the activities that comprise technological initiatives for social empowerment:

- **Goal of the initiative**. It is important to remember that empowerment and social development have different connotations for different people and that initiatives may focus more into certain aspects of the definition than others resulting in different outcomes. For instance, as discussed in the previous chapter, traditional approaches to development may lead to the empowerment of individuals and the reinforcement of existing social structures. In the case of this thesis, I am particularly interested in the technological initiatives that foster youth participation and local civic engagement as described earlier in this chapter.

Table 1 - Variables to be considered in the design and analysis of technological initiatives for social empowerment

Approach variables	Goal of the initiative	What aspects of empowerment does it aim to address?
	Intended audience	Who does the initiative aim to empower?
	Scope	What is the domain of the activities developed as part of the initiative?
	Activity organization	How are those activities going to be structured?
	Required resources	What kinds of materials, technologies and support structures will be required?
Setting variables	Space organization	Where is the initiative going to happen? How is the space organized?
	Accessibility	How inclusive is the initiative?
Empowerment variables	Individual empowerment	What is the impact of the initiative on individuals?
	Organizational empowerment	What is the impact of the initiative on organizations?
	Community empowerment	What is the impact of the initiative on the larger community?
Climate variables	Activity engagement	How relevant and attractive is the initiative?
	Activity participation	How does the initiative engage participants in decision-making?
	Activity outreach	How many individuals and organizations became involved?
	Technology usage	How are the different tools used in the initiative?
System variables	Sustainability	How can the initiative survive over time?
	Scalability	How can the initiative be replicated to multiple sites?
	Spread	To what extent can a single initiative increase its capacity?
	Ease of adoption	What are the challenges inherent to starting the initiative?

- **Intended audience**. What are the age and socioeconomic status of the participants? Do they live in the same area? How much access to they have and how familiar they are with modern technologies such as computers, cell phones, cameras, etc.? Do the participants have to work? How much time would they have available for the initiative? Are they already engaged in community-related initiatives? Answers to such questions can be very helpful to determine the level of support that will be required and the way the overall initiative has to be organized. In the Young Activists Network, we started with a broad definition of whom we were planning to work with – mainly youth of 10 to 18 years old who came to our partner youth technology centers – and only with time we started to pay more attention to specific characteristics of our members.

- **Scope**. How broad or how narrow are the issues and activities that young people are going to be involved with? Are they going to focus on questions related to their families, the youth organization they are part of, the neighborhood, the city, the country, the planet? Are they going to concentrate on questions related to virtual communities? As discussed earlier, an initiative whose goal is to paint a school mural is very likely to require a different kind of support and resources than one that focuses on addressing the environmental issues of global warming. They will also be prone to different levels of feedback and engagement that may be appropriate to participants of different age groups and backgrounds.

- **Activity organization**. Even initiatives that aim at similar audience, resources and scope may be organized in different ways resulting in totally diverse outcomes. Some may emphasize the development of technical skills, while others may concentrate more on personal reflection, teamwork or activities on the street. As it is going to be discussed, there is no single recipe to promote youth participation and local civic engagement and, unfortunately, there is a lack of detailed references describing best practices on how to do that with technologies. In the case of the Young Activists Network, for instance, many educational approaches or implementation paths had to be tried out before finding one that allowed youth to use technologies in a contextualized way and take the lead in their community-oriented projects.

- **Required resources**. How many hours, what kind of equipment, and what kind of support will be required by the initiative? Are all the required resources available at the organization or at the community? What kinds of things would have to be brought from the outside? Would local staff require any special training?

  Helping young people feel confident about themselves, express their opinions and work as a group may require specific staff assistance before and during the initiative. Likewise, the development of projects around the neighborhood may require transportation to bring young people around, connections with local organizations and other things that may not be readily available. Similarly, working with mapping tools, video cameras and other technologies may entail specific training in order to be done properly. Indeed, as it is going to be discussed, in some cases youth technology centers may already have most of the required resources, but do not necessarily know how to use them to create a friendly environment for youth participation. In other cases, the centers are already so overwhelmed that it is virtually impossible for them to go beyond their current activities to support youth in their own projects.

Setting variables. The following are the main variables to be considered when analyzing or designing the location or space in which the initiative is expected to run:

- **Space organization**. Youth technology centers vary widely in the way they are organized. Some may look more like a lab, with computers organized in rows throughout the entire space, while others may look more like design studios with large tables, sketch boards and craft materials. In our research we found out that, among other things, it is important to consider if the setting will be shared with other people or initiatives. That can be either good or bad, depending on how well the different groups complement each other. It is also important to consider if young people will have an adequate space for discussions and planning and whether or not technology will be within easy access. Whereas for some activities it was important to have computers at hand, for others the proximity to the machines turned out to be more distracting than helpful.

- **Accessibility.** In an ideal situation, civic engagement initiatives should be open for all members of the community to participate. However, as discussed in the background chapter, the very way in which community technology initiatives are organized tends to create barriers that prevent the inclusion of many.

There are different kinds of barriers to accessibility (Table 2). Some of them are community-related and involve, for instance, the location of the initiative, the transportation facilities that exist for people to get there, etc. Other barriers are organization-related and have to do things like hours of operation, fees, attendance capacity, norms, services provided, and others.

Community-specific	Location, transportation availability, socio and cultural norms, laws, etc.
Organization-specific	Hours of operation, fees, attendance capacity, internal regulations, etc.
Device-specific	Ergonomics, cost, media capabilities, etc.
Application-specific	Required skills, interface metaphor, usability, relevancy, etc.

Table 2 - Accessibility barriers inherent to community technology initiatives

Emerging trends in mobile and communication technologies can help overcome some of those barriers by bringing services and information to the people whenever and wherever they are. However, technology itself also incurs in a series of barriers that prevent participation. Examples include device-specific barriers such inadequate hardware ergonomics or high costs; application-specific barriers such as specific skills required to use the tool; and also content-related aspects such as the language used, the interface metaphor, or the relevancy of the functionality made available.

As part of the Young Activists Network we had several situations in which the time or space made available for the sessions was not the best for youth. In others, the level of literacy required by the tools was beyond the one of the participants, causing frustration. As it will be discussed in chapter 5, the What's Up Lawrence initiative

attempted to use telephones to address several of those issues, but there is still much work to be done in this area.

Empowerment variables. The following are the empowering variables that have to be considered in the design and analysis of technological initiatives for social empowerment:

- **Individual empowerment**. How has the initiative impacted its participants? Have they become more confident in their abilities? Have they acquired important skills, or learned meaningful facts about their communities? Have they established new connections with other individuals and organizations that may support them? Has the initiative motivated its members to participate more actively in community events? Although the main goal of this thesis is to create technological initiatives that focus primarily on young people and help them connect better with their communities, it is also important to analyze the impact of the initiative in the adults who are also part of it. In the Young Activists Network, for instance, the volunteers who facilitated the sessions with the youth became extremely impressed about the ideas raised by young people and the energy youth put into the things they cared about.

- **Organizational empowerment**. How were participant organizations affected by the initiative? Have they changed the way they perceive young people? Have the organizations changed the way they structure themselves? Have they established new partnerships with organizations that may support them in the future? Has the initiative increased the capacity of organizations to reach out to other individuals and organizations? Have those organizations become more inclusive over time?

- **Community empowerment**. Has the technological initiative fostered the creation of new empowering initiatives in the community? Has it contributed to provide participants with a better sense of community and shared values? Has it contributed to concrete changes in the community environment?

Climate variables. The following are the main variables that help characterize how the technological initiatives for social empowerment evolve over time:

- **Activity engagement**. In order for initiatives to succeed, it is important that they be relevant and attractive to the individuals and organizations that are related to it. That is a core element required to guarantee their longer term sustainability and scalability. Indeed, as it is going to be discussed, sustaining youth engagement in initiatives such as the Young Activists Network turned out to be not an easy task, especially when participation was optional, and the projects were long-term and competed with other initiatives that required less commitment or offered more direct or immediate rewards.

- **Activity participation.** While the "individual empowerment" variable discussed above is concerned with the amount of perceived control (or empowerment) that individuals acquire over their own lives as a result of the initiative, the "activity participation" variable has to do with the opportunities provided by the initiative for the individuals to practice decision-making within the activities that compose the initiative itself. Hopefully, by allowing participants to make decisions and learn from their actions within the context of the initiative, they will be more likely to extend that knowledge to other aspects of their lives.

When analyzing the level of control or participation that young people have in relationship to the initiative, it is important to distinguish between initiatives in which young people are either free, obliged or prohibited to participate. It is also important to identify the level of participation that youth will have in the decisions inherent to the initiative itself. According to Hart (1997), youth participation can range from instances in which young people are manipulated or used as decoration, to ones in which young people actually lead the initiatives and share decision-making with adults.

In our work, we aimed for the latter. In fact, several of the changes implemented from one design experiment phase to the other aimed at creating better conditions for

young people to externalize their thoughts about their community with a minimum of direction from the adult facilitators that worked with them.

- **Activity outreach**. How many and what kinds of individuals and organizations end up being involved in the initiative? The success of empowering initiatives is directly dependent on the establishment of support networks that help in the implementation and sustainability of the different projects implemented by the participants of the initiative. As will be seen, one of the main challenges of the Young Activists Network was the lack of outreach to residents and organizations from the local community. The What's Up Lawrence initiative attempted to address that issue by creating a telephone- and web-based network that facilitated communication across the city.

- **Technology usage**. This variable has to do with the role played by the tools vis-à-vis the development of the initiative. Although technology availability should be seen as an independent variable to be considered under "required resources," the actual way in which technology is used constitutes an important dependent variable to be observed. For instance, was technology used to attract young people? Was it used to support specific tasks such as problem analysis, group communication, or promotion of the initiative? Were there specific parts of the initiative that could benefit from new technologies? Were there specific aspects of the available tools that could be improved to make them more fit to the task?

As it is going to be discussed, although there are several ways in which modern technologies could be used to support youth engagement, the reality is that the tools usually available in youth technology centers are not necessarily appropriate for the task. In some cases, the lack of ideal tools might be compensated with alternative methods or extra adult support, but the options may not be as good. Hopefully, the case studies and discussions raised in this thesis will help attract more attention to these problems and, with that, contribute to the development of better-suited technologies for local civic-engagement.

System variables. The following are the main variables that affect the initiation, replication and sustainability of technological initiatives for social empowerment:

- **Sustainability**. An important question to be considered in any community-related endeavor is how well the initiative will survive over time. A common solution to this problem is to try to minimize technical and personnel costs as much as possible or try to incorporate some sort of revenue generation mechanism as part of the initiative itself. The caveat, however, is that the emphasis on lower-costs or self-sustainability may end up driving too much of the process and preventing the exploration of alternative solutions that could prove to be better in the longer range. Moreover, sometimes there is a tendency to measure the sustainability of community technology initiatives in terms of the direct costs and outcomes, without necessarily balancing those costs in relationship to the more intangible or larger-scale socio-cultural products of the initiative. For instance, how to calculate the cost-benefits of schools and other educational organizations? To what extent does it make sense to force educational, health and cultural initiatives to be self-sustained? In some ways, its probably better to expand the scope of analysis from the initiative itself to the community its part of and try to analyze the sustainability of the set as whole. In that case, the question would be more like: can the community sustain its empowering initiatives?

  Unfortunately, as pointed out in the previous chapter, initiatives that try to engage people in meaningful community development tend to require a lot effort and be extremely dependent on their organizing team. As found out in our experiments, the same seems to be even more so in initiatives involving youth. In the design experiments described in this thesis, we explored a few technical and methodological alternatives to those challenges, but much work still remains to be done in this area.

- **Scalability**. Other important question to be considered in the analysis of technological initiatives for local civic engagement is how easy it would be to scale the initiative to different settings. In the case of the Young Activists Network, we started with a centralized, workshop-based approach that we thought would be easy to

replicate. However, we soon realized that, in order to do something more sustainable and respectful of the local values, it would be better to implement a more decentralized and organic approach to civic engagement.

- **Spread**. While the scalability variable is concerned about the replication of the initiative across multiple settings, the spread variable is concerned about the challenges inherent to expanding the capacity of the initiative within its own setting. For instance, how difficult would it be to increase the number of participants in the Young Activists Network or in the What's Up Lawrence initiative? Among other things, with the What's Up Lawrence initiative we learned that certain activities required a minimum volume of participants in order to make sense. The question then became how to structure the activity so that it could spread to achieve that volume in a sustainable and meaningful way.

- **Ease of adoption**. The What's Up Lawrence initiative also showed that the adoption of a new technology initiative may encounter challenges both at the individual as well as the organizational level. It is important to try to address those challenges before attempting to measure other systemic, climate or empowering variables.

It is worth pointing out that the variables listed above are all inter-dependent and inter-connected. For instance, different approaches to youth participation may require different resources and that may affect both the sustainability and the scalability of the initiative.

Moreover, although the all the different variables listed above are central, there were times when we had to focus in some of them and not in others. For instance, for most of YAN's first year we were concerned with the development of an appropriate educational approach that would be participatory and lead to the implementation of meaningful neighborhood-oriented projects. Until we managed to do that, there was no major reason to push for other experiment variables such as sustainability or scalability.

Finally, it is also important to realize that, in an ideal world, design research should be done with a team of experts focusing on different aspects of the experiment such as

technology usage, youth development, documentation, etc. Although during YAN's second year we managed to get volunteers to concentrate on community support, materials' development and technology design, most of the work was accomplished primarily by a team composed by myself and educational facilitators from the youth technology centers we partnered with.

4. The Young Activists Network initiative

In order to understand the ways in which technology could be used to support the implementation of action-research projects with youth, in 2002 I started the Young Activists Network (YAN), a volunteer-based initiative that partnered with youth technology centers from different parts of the world and helped them organize local youth to become agents of change in the places where they lived.

As discussed in the background chapter, the development of participatory-action research projects with youth is usually perceived as an effective way of helping young people develop critical understanding and participate more actively in their communities. According to this approach, young people should work side-by-side with adults following a research-and-action lifecycle that goes from identifying personally meaningful community challenges to solution planning, implementation and reflection.

YAN projects involved youth going out into the community, interviewing residents, visiting local organizations, taking pictures, building representations and, based on that, identifying personally relevant neighborhood challenges that they, with support from adults, would like to tackle. In addition to enacting community change, young people were motivated to document their own work and, in parallel to the project, create some sort of documentary or presentation telling the story of their initiative. At the end, a community celebration was organized for youth to present those stories and share the inspiration with other youth and community members. That event also provided an opportunity to recognize the efforts of everyone who contributed to the projects.

Among other projects, youth from India planted trees along side the road that crossed their village, children from Charlestown (MA) published a flyer about Children's Rights in their community, and young people from Chelsea (MA) produced an event about teen pregnancy. Other groups organized street clean-up events, raised funds for local causes, or started campaigns for things that were pertinent to them.

In general, YAN projects were facilitated by a team composed of up to 3 YAN volunteers and 1 or 2 staff members of the youth technology center. The facilitators usually met with a group of 5 to 10 youth of 10 to 18 years old once or twice a week for about 2 hours per session. Depending on the complexity, projects lasted from 2 weeks to about 3 months.

As it is going to be detailed in the following sections, the Young Activists Network model evolved through the development of three design experiments between the fall of 2002 and the spring of 2004. During this period, YAN started in Charlestown (MA), expanded internationally, and then refocused in the Boston area. It also went from a centralized, workshop-based approach to a more decentralized and participatory one that was implemented with the support of specialized volunteers (Table 3).

1st YAN attempt	2nd YAN attempt	3rd YAN attempt
Fall 2002	Spring 2003	Fall 2003 – Spring 2004
Charlestown (MA)	10 youth organizations in 7 countries (Brazil, Colombia, Costa Rica, India, Mexico, Philippines, USA)	3 youth organizations in the Boston area (Charlestown, Chelsea, South Boston)
Workshop-based approach	Participatory, open-ended approach	Participatory, open-ended approach with organized volunteer support
Centralized, pre-defined curriculum	Locally adapted, bottom-up curriculum	Locally adapted curriculum with reference materials

Table 3 – The evolution of the YAN model

In its peak of activity, YAN included 10 community organizations from 7 different countries. With the exception of one organization that we worked with in Brazil, all the others were part of the Computer Clubhouse Network (Resnick, Rusk et al. 1998), an international network of over 100 learning centers in which young people 10 to 18 years old from underprivileged communities come to learn about computers and, in collaboration with adult mentors and other youth, develop projects that are meaningful to them.

At the Computer Clubhouse sites, young people have access to modern computers, cameras, sound studio, printers and design-oriented software. Most of the projects developed usually focus on the creation of websites, videos, graphic design, interactive art, games and music. The Young Activists Network initiative was perceived by Clubhouse coordinators as a venue to connect the resources and creativity of the club with the reality of the outside world.

Although most of the organizations that were part of YAN were members of the same umbrella organization – and therefore shared the same philosophy and had similar tools – we soon learned that they differed enormously on, among other things, the way they organized their time, on the number and background of the adult volunteers they had at their disposal, the size and layout of their physical space, the kind of relationship they have with other initiatives within or outside their host organization, and on the kinds of issues faced by their host communities.

During our first attempt to implement YAN in Charlestown (MA) we learned that, in order to respect and build on the diversity inherent to community organizations, rather than trying to disseminate our ideas through a series of predefined workshops, it would be better to follow a more decentralized and bottom-up approach. We decided then to draft the core goals and values of the Young Activists Network, invite Clubhouse coordinators who sympathized with the ideas and, together, try to build a mutually supportive network based on the sharing of experiences and the collaborative construction of appropriate tools and practices.

The core values of the Young Activists Network can be summarized as follows:

- **Youth participation throughout the entire process.** As part of YAN, youth should be actively involved in every step from framing the problem to be addressed to implementing the actual solution. Instead of using maps or other ready-made representations right from the beginning, we encouraged young people to first externalize their own perceptions of the neighborhood, identify community aspects that were meaningful to them, and only then seek for other sources of information. Adults could come up with themes and ideas, but those had to be presented as

suggestions that could be chosen or not by the other participants of the team. The goal was to create an environment in which youth felt respected and encouraged to express their opinions.

- **Concrete neighborhood change.** By focusing on the implementation of solutions to locally perceived challenges, YAN projects aimed at helping participants go beyond discussion or information manipulation and actually do something in the "real world". Moreover, the focus on the neighborhood was meant as a way to expose youth to the reality outside homes, schools and after-school centers and deepen young people's understanding of things that affect their lives.

- **Human connectivity.** YAN projects provided direct opportunity for youth to internalize the values of teamwork. They also offered a meaningful context for youth and adults to work side-by-side with a common purpose. In addition to that, by way of mentorship programs, visits to business and community organizations, organizing presentations and other events, the goal was to facilitate connections between the participants and people from different backgrounds, expertise and social levels with whom they may otherwise not interact with in their daily lives.

- **Contextualized uses of technology.** Even though YAN projects were not technology-driven, we expected them to provide an appropriate context for youth to learn about digital tools and explore how those tools could be combined with other materials and social support in the creation of things that were important to their lives. In fact, through the development of their projects, young people might realize that they do not necessarily need digital tools to better their communities. However, they might also realize that the wise use of those tools could greatly enhance the development of their ideas.

- **Story-telling.** In addition to enacting community change, a central tenet of YAN included the production of a video or presentation (or some other compelling form of shareable documentation) to reflect the motivation, the process, the outcomes and the lessons learned with their project. The goal was to share those videos among sites and use them to facilitate outreach, promote discussion, and inspire other individuals

and organizations. They would also serve as personal souvenirs that young people could reference when talking about their accomplishments.

- **Recognition.** The end of each project was signified with a community celebration party organized for the young activits to tell the stories of their projects and share the inspiration with youth and community members. Those events also provided an opportunity to show the videos and recognize the efforts of everyone who contributed to the initiative.

Unfortunately, the implementation of the values above was not trivial and required a lot of experimentation, engagement from the partner organizations, time for reflection, appropriate tools and active support.

In the next section, I provide a detailed description about the three main different design phases or attempts that YAN had to pass in order to better suit the cultures and realities of the people, organizations and communities we worked with.

Information about those phases was collected in a variety of ways: through personal journal entries and class papers written by adult facilitators, email exchanges, collective notes added to a private website, as well as digital pictures, video snapshots, and a collection of written materials and diagrams produced by youth and adults as part of the self-documentation of their own work.

4.1 First attempt: the workshop-based approach

The first attempt to bring the Young Activists ideas to reality happened during the fall of 2002 and followed a workshop-based approach.

In our opinion, workshops were something that could be visualized over time, assessed and later modified. They were also like a product that community organizations could "buy into" without being scared to commit. Moreover, we thought that formatting YAN as a workshop would make it easier to scale it to a variety of locations. However, as it is going to be discussed below, although the workshop approach may be effective for

certain initiatives, we found out that it is probably not the most appropriate solution for the sustainable local-empowerment goals that we have envisioned for YAN.

The vision. Anyway, according to the original plan, workshops would be given in collaboration with staff from the partner community organization and, ideally, would help young participants develop, among other things, neighborhood and self awareness (community maps, list of personal talents, personal social network), communication skills (talking on the phone, making presentations, organizing community events), social activism skills (resource raising, interviewing, researching, team leading, action planning, execution and documentation, accountability), technical skills (video shooting, text and graphics processing, emailing), and constructive attitudes (respect, collaboration, self-initiative, learning from one's own mistakes).

At the end, the young people would organize a celebration event to tell the stories of their projects for everyone to know and get inspired. From that time on, they would become recognized as official members of the Young Activists Network and would be invited to support and coordinate future YAN initiatives.

The reality. In practice, we decided to try the first version of the Young Activists Network workshop in a Computer Clubhouse located at the Boys and Girls Club of Charlestown (MA). That location was selected for many reasons: the Clubhouse manager had for long demonstrated interest in youth activism and participation; the site was close enough to MIT for me to go there at least once a week; and it was located in a place with sharp income disparities and serious social issues that affected youth, including street gangs, large percentage of households headed by single parents, high rates of substance abuse and school dropout.

As mentioned in the previous section, although Computer Clubhouses all share the same basic infrastructure and educational philosophy, each site operates differently depending on a series of factors. In the case of Charlestown, the Computer Clubhouse was located side-by-side with the other rooms in the main building, its doors were always open and, like in other Computer Clubhouse sites, youth were free to come and go whenever they wanted. In our opinion, that sort of setting helped create an atmosphere in which

computers could be more easily integrated into young people's activities and seemed to facilitate the spread of the youth centric, project-oriented nature of the Clubhouse culture to the other parts of the host organization. On the other hand, the openness of the Clubhouse posed many questions about how to motivate young people to commit to YAN without being distracted by other events happening around them.

The organizing team consisted of the Clubhouse manager, the researcher (myself), and a volunteer who used to be a former school teacher and had experience organizing summer programs in which youth painted murals, ran book drives and implemented neighborhood-oriented projects.

After a couple of weeks visiting the Club, planning and negotiating, the activities with Charlestown youth finally started with an informational session on November 11th, 2002. The initiative was planned to run for 12 two-hour sessions over a 5-week period and culminate with a community event on December 23rd, 2002. We thought that would provide us with the minimum time required for participants get to know each other better, discuss local community issues, implement a simple project of their choice and have some sort of celebration before the holiday season.

The workshop curriculum had been carefully planned. The first week would focus on introductions, teamwork and on learning how to use the video camera. The second week would focus on practicing predefined community service activity in the neighborhood, the third week would concentrate on project planning, the fourth on the actual implementation of the project, and the final week would be devoted to finishing and celebration.

In a typical session, young people would engage in a variety of activities ranging from games and discussions to hands-on exercises. Example activities included drawing a map with most important points of Charlestown according to oneself, representing personal and neighborhood past events in a common timeline and indicating the kinds of changes that youth would like to see happening in the future, learning to do video interviews, documenting the participant's action plans in their "young activists notebook", etc.

In practice, the actual execution of the workshop ended happening very differently from the expected. Some activities could not be implemented, others ran surprisingly well, and many new ideas were raised.

Challenges and lessons learned

The following are some of the main challenges and lessons that we identified during the first attempt to implement YAN in Charlestown:

- **Limited outreach**. In spite of hanging posters around the Club and talking to youth one-on-one, we only managed to attract ten youth to the information session event and five young people 12 to 13 years old for the first official day of activities.

  Although that number allowed us to start, in our opinion YAN was the kind of initiative that would get funnier and better with more participants. Unfortunately, we did not know how to attract more people. The young people we contacted already seemed to be busy with other things. One idea would be to advertise YAN at local schools and organizations. Even though we had thought about that early on, that idea seemed to be an unusual thing for the Boys and Girls Club to do, since young people would have to pay and become members of the Club in order to be able to participate in our meetings. Moreover, at that point we were also afraid of attracting too many young people workshop that was still in its pilot phase.

- **Lack of youth engagement**. Lack of youth engagement was, by far, the challenge that struck us the most. Even though we had started with 6 participants, we ended the activity 5 weeks later with 2 single youth. Moreover, none of the young people who were present during the first week finished the activity. In fact, many youth showed up for 1 or 2 sessions and never came back.

  Although it is hard to generalize out of a single experience with so few participants, we came up with a few hypotheses for the lack of commitment:

  a) **The activity was too abstract.** Young activism and participation are not something that, in general, young people – or anyone – are familiar with. It

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requires a special language and attention to help them understand and get excited to join YAN. In our case, we used videos highlighting youth-led community projects. In addition to that, we could also have taken Clubhouse youth to do community service right in the beginning, rather than after 2 weeks into the initiative. Nevertheless, by talking to the Clubhouse manager we realized that even activities that were more concrete -- such as creating a Clubhouse newsletter -- never succeeded beyond the first couple of weeks. Abstraction was one issue, but there were others that deserved attention as well.

b) **Clubhouse youth are not used to committing**. That issue became very clear on conversations with a workshop participant who simply decided to quit. Although the Clubhouse was a place where young people could come and go whenever they wanted, that did not mean that once they joined in, they should not commit to the other people who were involved with that activity. That was an important thing to be learned and, in our opinion, deserved more attention from everyone. Perhaps we should have emphasized more personal commitment right at the beginning of the initiative.

c) **The activity was too long**. The amount of time required for YAN was much more than the average required for most activities at the Clubhouse. However, the Charlestown Boys and Girls Club had a sports team that met regularly several times a week. The difference is that they had very some very concrete goals that kept the athletes focused throughout the entire year. If we wanted to implement long-term projects with youth, perhaps we would have to define specific landmarks to build motivation in our group and eventually reduce the number of sessions required.

- **Bad timing**. Since YAN had not been considered during the yearly planning of the Boys and Girls Club, the workshop sessions ended up happening from 6:00 pm to 8:00 pm, a time in which many young people were already involved with other activities or tired from the day. In addition to that, the five weeks that we had for the workshop overlapped with Thanksgiving week, with a 2-week travel that I had to do,

with a period in which the Boys and Girls Club was starting its renovation process and with the holidays season. Even though we knew about most of those constraints ahead of time, we thought it would be important to try something and learn as much as possible from the experience.

- **We stuck too much to our original plan**. Despite the effort, we always had the feeling that we were either rushing or not doing enough during the sessions. Sometimes we miscalculated the amount of time that would be required for certain activities, sometimes people were not in the mood for the things we had originally planned, and sometimes unforeseen events – such as having to introduce the activity to new members – prevented us from moving forward.

  Looking back, we were trying to achieve at any costs the goals we had set for the workshop without necessarily respecting the flow of the group and the constraints we had. As a result, many of the original activities – such as the community map, the personal talent's list, the young activists' notebook, the video interviews, and the shared time line – could not be explored in their full potential, some of the sessions became messy, and the workshop facilitators became frustrated over time.

- **Lack of informal, unstructured time with youth**. Even with the breaks, the sessions were so packed with activities that the adult facilitators did not have enough time to just hang around informally with the young participants. Nevertheless, the few opportunities in which I stayed at the Club a little before or after the sessions proved to be very rich. Then I was able to know more about whom they interacted with, the kinds of things that they liked to do, events that had happened in their community, and many other things. Likewise, those interactions allowed Clubhouse members to see me as person who had a life and interests that went beyond organizing the sessions.

  In a way, those kinds of connections lie at the core of the Young Activists Network, i.e., people being valued by whom they are and having pleasure to work together. Moreover, we, as adults, have to become more aware about the kinds of values we are fostering in the younger generation. The time that I have spent at the Clubhouse gave

me the impression that young people seemed to loved to say that they were busy, engaged with many things at the same time, even if they did not necessarily commit to any of those things. The impression that I had was that youth associated successful people – or at least their role models – with the image of people who are busy at all the time, and that the amount of things that one is involved with is perhaps more important than the quality of the things one does. In my opinion, it is our responsibility to change that situation by allowing ourselves more time to spend time with them.

- **Lack of integration with the host organization**. Many of the problems we had can be associated with the lack of a space for YAN inside the Boys and Girls Club. The physical space we had was constantly disturbed by people not related to YAN and there were many conflicting initiatives competing for the participant's attention around the Club. In our opinion, that lack of space resulted from, among other things, the way YAN started in Charlestown. YAN was not something that the Club had applied for and was eager to implement. Nor it was something that the Club perceived as a unique opportunity. To most, I believe it was seen mainly as an external initiative being carried by one or two volunteers and the computer room manager.

Of interest, there was another community service initiative running at the Club. Although the motivation and the structure of that initiative were different from YAN, in our opinion it would have been good if the two had been combined together.

In fact, we have always imagined the Young Activists Network as an initiative that might go beyond the walls of the computer room and get combined with other initiatives of the Club. For instance, young activists could use the culinary class to bake cookies for people in need, organize sports events in the gym, work with the art staff in the organization of an exhibit, etc. In all those cases they could use computers to advertise, document or add some additional elements to the initiative.

The Young Activists Network could also use the resources of the computer room better. For instance, the responsibility associated with teaching technical skills such

as video and text editing could have been transferred to computer room staff and explored outside the workshop hours. This way, YAN sessions could be more focused and other people from the Club could assume ownership over the activities being carried.

As suggested by the Computer Clubhouse manager, it would be good to, before starting the next YAN attempt, to get together with all Boys and Girls staff members who would be willing to participate in YAN and see what kinds of activities they would come up with. In our opinion, that would contribute a lot to the sustainability and spread of YAN over time.

- **Lack of contact with young people's families**. Throughout the workshop we never managed to talk to the youth's parents. In our opinion, that would made a great impact, since many of the YAN members had been forbidden to participate in the sessions due to some family commitments – such as a member having to go to the grocery store with his mother – or impositions – like the participant who had to stay at home due to bad grade reports. We also believe that contact with parents would help them become more aware of the capabilities of their children, would provide youth with further incentives to stick with the workshop, and would open additional venues for young people to connect with their community.

- **Lack of participation**. One of the goals that we were pursuing right from the beginning with the Young Activists Network was to involve young people in the decision making process of the YAN itself. However, perhaps due to the lack of time to get to know one another better and the frequent turning over of workshop participants we ended up not being able to involve youth in the leadership team the way we wanted to. We had a couple of sessions in which they led discussions and others in which they decided what to do, though. However, there is still a long way to go before they start conducting YAN activities by themselves.

- **Too much support required**. In average, the YAN workshop required about 10 hours per week for each one of the 3 members of the organizing team. Although everyone was highly committed and motivated at the beginning, by the third week the

level of enthusiasm was already low. The high expectations that we all had, the lack of commitment from the youth and the other issues described above contributed to increase the frustration level. I also realize that the 2 weeks that I had been away helped lower the morale even more, not to mention the negaitve impression that it may have passed to the young participants of the workshop.

In general, if we expect YAN to scale and become sustainable we would have to reduce the amount of commitment required from volunteers to about 2 or 3 hours per week – which is something that, in our opinion, Clubhouse volunteers would be willing to give -- and rely more on the local staff and other resources available at the Clubhouse. In addition to that, it would be important to lower expectations and have better mechanisms that recognize the effort put by everyone into the initiative.

In sum, while on the one hand the implementation of the YAN workshop provided us with good insights and real-life experience, on the other hand it demonstrated that many things would have to be changed from the original plans in order for YAN to fit better into the Clubhouse environment, foster more youth engagement, and become more sustainable over time.

In fact, the first YAN attempt made it clear to us that the very notion of a workshop-based approach was probably not the most appropriate for the kinds of empowering values we were aiming for. In particular, we left with the impression that the time limitations and the pre-defined structure of workshops might impose artificial constraints to youth projects and not necessarily respect the diversity of the youth and organizations that we would like to work with.

One could imagine workshops being used to start a process or clarify certain concepts, but it was really hard for us to imagine how youth organizations would maintain the development of community projects after the workshop was over.

In order for YAN to succeed, it would have to be established as a regular initiative – with predefined time and space – within the Club and get better integrated with the other activities that were happening around. Ideally, it would also need get more parental

involvement, increase the ways in which young people could participate in the organizing process, and rely on more concrete, more relaxed and less-overwhelming sessions with youth.

4.2 Second attempt: the open-ended approach

The second phase of the Young Activist Network experiment happened during the spring of 2003 and evolved in two fronts. The first comprised the implementation of the "Piece of Peace" project in Charlestown and could be seen as an attempt to address some of the issues raised in the previous section. The second focused on working with other youth technology centers – mostly Computer Clubhouse sites – in an effort to develop a more decentralized and mutually supportive network for people to share experiences and learn from one another.

The idea of the latter came about during a birds-of-a-feather discussion about technology and local youth activism that the manager of the Charlestown Computer Clubhouse and I organized during the 2002 International Computer Clubhouse Network conference. Much to our delight, about twelve managers from different parts of the world attended the discussion, talked about initiatives that they were implementing, and demonstrated interest in contributing to YAN.

The Charlestown experience

The main goal of the second attempt to implement the Young Activists Network in Charlestown was to develop a lighter-weighted and more appropriate approach to youth participation that could address some of the issues identified in the past.

Since the Arts Director of the Charlestown Boys and Girls Club already had a grant to develop a project about peace in Charlestown, the Clubhouse manager and I decided to benefit from that opportunity and use it as a starting point for a new youth activist project (Figure 4).

Instead of planning everything in advance like in the previous YAN attempt, the three of us thought it would be better to start with a concrete project goal, sketch the activities for the first 2 or 3 sessions, and refine the details of each session along the way.
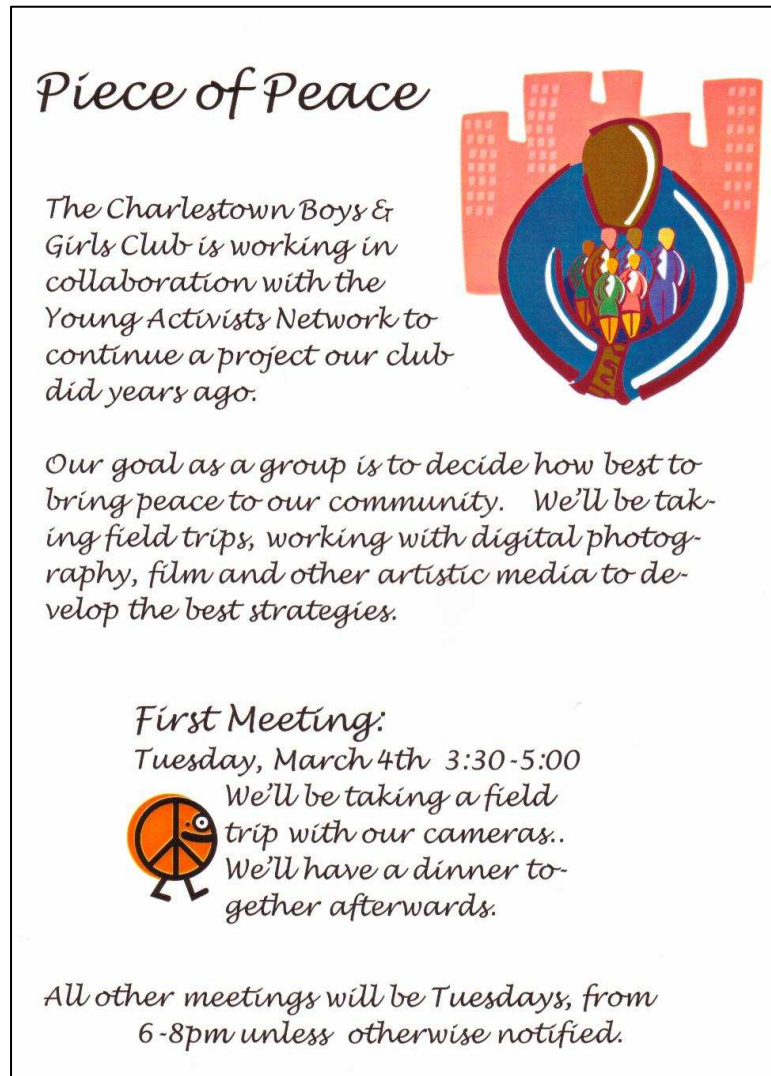
Figure 4 - Poster inviting youth to the Piece of Peace project

We also decided to reduce the number of activities per session, increase the amount of time to be spent with the participants outside in the neighborhood, and allow more space for discussions and informal interactions. Hopefully, by the end of the first project youth would have a better sense of what YAN was all about and would be able to come up with their own ideas.

With all that in mind, we decided that the goal for the first project would be to create bumper stickers about piece in Charlestown and that we were going to meet with the youth in 2-hour sessions every Tuesday for about 2 months.

The first session attracted nine 12 to 15 year olds. We introduced the overall idea of the project and asked the participants to list the places that they considered peaceful and non-peaceful in Charlestown. Then, organized in groups, the young people led the facilitators in a guided tour around the places they had listed and used the Clubhouse digital still cameras to register each location.

As many of the participants got excited about the activity, we lent them a few disposable cameras to take pictures of the community during the other days of the week. Ideally, we should have lent a digital camera, but they were considered too expensive to be left with the youth.

In the second session, we printed the pictures and used them to foster a discussion about what was it that made some places more peaceful than others (Figure 5). It was interesting to realize that sometimes a single place may be considered peaceful for some and non-peaceful for others. Issues of war and religion were also raised. At the end, the young participants were very happy for having the opportunity to express their opinions and get to know more about one another's impressions.

Figure 5 – Discussion about peaceful and non-peaceful places

It is worth mentioning that, even though the Piece of Peace project had been initiated by adults, the facilitator team did their best to create opportunities for the young participants to practice their leadership skills and assume more ownership over the project. In order to foster more participation, the youth were often asked to facilitate group discussions, present their ideas for the other members, summarize meeting notes on the whiteboard, take pictures of the session and give suggestions about how things could be improved.

For the next six sessions, with support from the facilitators, the young activists discussed the kinds of peace messages they would like to pass to the community. They also drew their bumper stickers on paper, learned to use a scanner to digitize their work, discussed ways of distributing the bumper stickers around and drafted a letter to be distributed with the stickers (Figure 6).
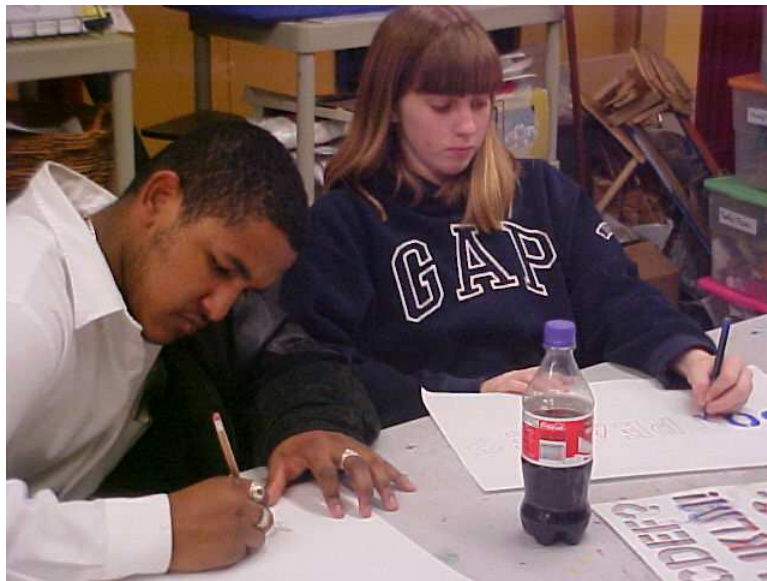
Figure 6 - Young activists creating bumper stickers about peace

Of those sessions, two of them were marked by extraordinary activities. In one of them, YAN members from Charlestown participated in an Internet chat with YAN members from the Palacio Postal Clubhouse (Mexico City). As both Clubhouses are located in historical neighborhoods that are now suffering from a series of social issues, the facilitators from Mexico City and Charlestown thought it would be a good idea to have that special session.

Although the participants of both sides had a fun time trying to communicate in a mixture of English and Spanish, my impression was that the interaction with someone from another country felt too abstract and that perhaps it would be more meaningful to connect young people with other youth from their community or from other neighborhoods in the Boston area.

In another session, young and adult members of the project went to watch a local baseball game. Since the Charlestown Boys and Girls Club had free tickets for the game, we decided to use that as a special occasion to have fun with the group in a different context.

Finally, while the bumper stickers were out being printed in a specialized shop, the group started working on the documentary production. In order to do that, another student from the Media Lab volunteered to carry out a one-session documentary-making workshop with the youth. During that session, she showed examples, had the participants present their ideas, and taught them the basics of the video editing software that they had available at the Clubhouse.

For the next couple of weeks the main goal of the sessions was to produce the documentary. The group wrote a script and selected images from the web, from printed materials about Charlestown, and from the pictures taken in the previous sessions.

Since printing the bumper stickers was taking much longer than expected, in one of the sessions we decided to borrow video cameras and take the young activists to interview local residents about Charlestown. To our surprise, one of the Irish-looking adults interviewed said that, for him, the problem of Charlestown was the Black and the Puerto Rican. That comment affected the members of our group, especially because most of them were either Black or Puerto Rican. They became furious and wanted to do something to retaliate. In order to cool down the spirits the facilitators opted to take the team back to the Club and debrief.

The interview incident sparked 1 hour of heartfelt conversation in which youth and adults discussed racism, neighborhood changes and other related topics. In the end, the group got to the conclusion that the racism expressed was probably the result of ignorance and

fear. Rather than splitting the community according to races or nationalities, perhaps a better solution would be to organize events in which people from different backgrounds could meet informally and have opportunity to learn more from one another.

Sessions like the above made us all feel good about the way YAN was evolving and providing young people with a trustworthy space to express their opinion and discuss matters that affected their communities.

Sadly, it took yet another couple of weeks for the bumper stickers to get printed. By the time they got ready, most of the youth were already busy or disengaged and the Clubhouse had to close for the summer vacations.

Fortunately, small group remained motivated enough to work with the Clubhouse manager during the summer to finish the documentary, distribute the stickers around the neighborhood and even make a short presentation about the project to the Charlestown Boys and Girls Club's Board of Directors.

The experience at the other sites

As mentioned before, in parallel to the "Piece of Peace" project in Charlestown, during the spring of 2003 we started working with other managers and volunteers that had demonstrated interest in starting YAN at their Clubhouses in Brazil, Colombia, Costa Rica, India, Mexico, Philippines, and USA. Since everyone was motivated and willing to learn together, we thought it would be good to start as soon as possible and see what would happen.

Through the course of that semester, I tried to maintain weekly interactions with the different sites. In general, talking by telephone was best. That allowed us to interact more directly, seemed friendlier, and did not require too much effort from the Clubhouse managers. In other cases, especially with sites such as the Philippines and India that had a large time difference with Boston, email was preferred.

At the beginning, my main intention was to establish a personal connection with each one of the participating site liaisons, get to know more about their ideas and expectations,

understand the specific characteristics of their Clubhouses, share perspectives on the project, tell them about what was happening at the other sites, and try to collaboratively define where to go next.

Over time, once we all started feeling more comfortable with our own experiences, I gradually started facilitating more direct interaction among the sites. The Internet chat session connecting the Mexico City and Charlestown sites was an example of that. Moreover, we also created a mailing list for everyone to talk about what is going on locally and ask questions to the other people.

Throughout this phase of the project, in addition to Charlestown, YAN managed to have participants from 9 Computer Clubhouses of 7 different countries (Brazil, Colombia, Costa Rica, India, Mexico, Philippines and the U.S.). As a reflection of their context and infrastructure, different local issues, and other factors, each one of those sites ended up evolving in a different way. The following is a brief description about what happened in each of them.

CEDES Computer Clubhouse (Alajuelita, Costa Rica). At CEDES, YAN was coordinated by the Clubhouse manager and his assistant. Among other projects, members worked on a youth newsletter in which young people talked about the things they liked or did not like in their communities. In another project, young activists started creating a 'radio theater' in which they read out loud and recorded a book whose story related to their community and added special effects to the narration. The goal was to send the final product to local schools and libraries. As reported by the adult facilitators, in addition to being fun and providing a contextualized way to develop technological skills, those projects aimed at increasing the reading and writing interests of both Clubhouse and school youth. One of the main challenges was to overcome the lack of time that youth had to work on their projects. Other challenges had to do with issues of violence and drug trafficking in the Clubhouse region, which prevented the development of youth projects on the streets.

CLT Clubhouse (Bangalore, India). YAN was already highly valued by CLT even before the official inauguration of the Clubhouse. The YAN Club, as the initiative was called, was facilitated by one external volunteer and two community adults. Counting with a large number of active youth participants, the group soon came up with a list of about 15 community-oriented ideas ranging from addressing environmental issues to creating a sports club, having more access to job opportunities, or fostering cultural events. In one of their projects, the young activists managed to build a badminton court in one of the villages (Figure 7). In another project, they planted trees alongside the road that crossed the area. As part of that project, they organized a field trip to interact with experts of the nearby University of Agricultural Sciences. According to the facilitators, it was amazing to see how youth who had never touched a computer before were using technology to take pictures and document their work. Unfortunately, the group struggled to raise the necessary funds for its projects. The group was also very dependent on external volunteers and had to stop its operation when the main facilitator had to move to a different city.

Figure 7 - The young activists of Bangalore (India)

e-Equality (Miami, U.S.). As part of YAN, the e-Equality Clubhouse organized a series of short term community-service projects in which, for instance, youth created valentine cards for the local hospital, designed logos for an organization that worked with people

with disabilities, and the like. The Clubhouse also organized a sexual awareness workshop for girls in which, besides talking about pregnancy prevention, the participants ended up creating a poster with a message they would like to pass to the members of their community.

General Trias Clubhouse (General Trias, Philippines). After working on an awareness campaign for children's rights and responsible voting, the young activists of General Trias organized a campaign to promote SARS awareness. As part of that, they have interacted with the local health department and made posters to be distributed all over the neighborhood.

Instituto Dom Bosco Clubhouse (Sao Paulo, Brazil). Different from what happened in other sites, rather than conducting its own YAN sessions, this Clubhouse provided support to youth activist groups that lacked the technical infrastructure to produce flyers, posters and other materials for their projects. As it is going to be discussed, the Clubhouse staff even contributed to the creation of a technology center in an underserved community where one of those groups was located. The new technology center was used as part of a YAN initiative developed in that community one year later (Lima 2005).

Mater Dolorosa Clubhouse (Makati City, Philippines). At the Mater Dolorosa Clubhouse young people already participated in the regular planning of the Clubhouse activities. As part of YAN, youth were motivated to identify local community issues and discuss which ones they would like to tackle with support from the Clubhouse. Among other things, they attended a workshop about drug abuse and created posters to be placed around the community.

Palacio Postal Clubhouse (Mexico City, Mexico). Since members of this Clubhouse lived in a historical neighborhood afflicted by drug traffic, violence, illegal trade and a bad reputation, one idea was to have young people going out to the community, identifying places and stories of special interest, and creating a series of alternative guided tours that they could lead around the area (Figure 8). Unfortunately, after a few very successful sessions, the mentors responsible for the project had to leave for personal reasons and the project ended up stopping for lack of people to take care of it.

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Figure 8 - Young activists interviewing people in Mexico City

Planetario Clubhouse (Guadalajara, Mexico). As a first project, young members of the Planetario Clubhouse were going to paint the main wall of the organization with messages and themes related to their community. However, due to problems involving members of conflicting gangs, the project had to be interrupted for a while. After a couple of months, the Clubhouse manager decided to resume the initiative focusing on girls – since they were not part of the gang conflict – and let it open for the other members and community residents to participate. Similar to the other sites, the Planetario also had difficulties to attracting adult facilitators to support the development of their long-term projects and the initiatives associated with YAN had to be stopped indefinitely.

Suba-Compartir Clubhouse (Bogota, Colombia). Guided by an extremely motivated mentor, the Suba-Compartir Clubhouse hosted weekly YAN meetings for several months and focused on a variety of media-rich projects such as the production of a video about the Clubhouse, an animation about how computers worked, and others. Since most of those projects focused more on perceived Clubhouse needs and lacked a more explicit neighborhood orientation, their goals sparked a discussion on the YAN mailing list and the projects were considered inappropriate for the Young Activists Network.

Challenges and lessons learned

The second attempt or phase of the Young Activists Network taught us a series of important lessons and helped us identify many points that needed more attention.

In particular, regardless of the challenges, the experience in Charlestown left a positive a feeling in the air. Despite the fact that the theme of the project had been chosen by the adult facilitators and that the extra time printing the bumper stickers curbed young people's enthusiasm, one way or another we managed to implement a project to the end.

In my opinion, the most important thing that we learned during this attempt in Charlestown was that, in order to build engagement, YAN sessions should be organized in such way that young people would always be working on something concrete or doing some action in the neighborhood. We knew that if our young members got bored or could not see meaning in the things being done, chances were that they would leave and never come back.

Rather than attracting participants with special prizes or external rewards, we wanted the activities to be genuinely interesting to them. In order to do that, we tried to incorporate progress reports and meaningful outcomes in each session (have the sketch of the bumper sticker, digitize the bumper sticker, interview people on the streets, etc.). We also organized a 10-minute reflection period at the end of the sessions for everyone to externalize what was good and what could be improved for the next time. However, after a couple of sessions the reflection period ended up being consumed by other activities.

While on the one hand the educational approach adopted in this phase of YAN allowed us to structure upcoming sessions based on recently identified needs, on the other hand it required a sort of planning on demand that consumed a large number of hours from the facilitators beyond the session time. The amount of commitment could eventually be reduced with more experience and better materials, but those still needed to be developed.

Another important lesson from the second Charlestown experiment was that the collaboration between the Computer Clubhouse and the Arts Department of the

Charlestown Boys and Girls Club turned out to be very positive for all. Among other things, the Arts Director brought new perspectives, shared part of the load carried by the Computer Clubhouse manager and provided much needed additional in-house support for the implementation of the project. Moreover, by having additional staff members involved, YAN could benefit from more resources and had more chances to be sustainable over time.

The interaction with the other Clubhouses outside Charlestown also opened our eyes for many things we had not noticed before. For instance, based on the attention received from Computer Clubhouse managers, it seemed that many youth technology centers would be interested in developing initiatives that fostered youth participation and helped young people connect better with the places where they lived.

Nevertheless, the YAN experiment described above made it clear that, in addition to a passion for youth empowerment, interested organizations would need a lot of support and orientation to be able to implement meaningful youth-led, community-oriented projects. As discussed in the previous section, the majority of the initiatives that managed to implement something to completion involved projects which were short-term and adult-initiated. Most of the attempts to implement longer-term projects ended up dying for lack of volunteer or staff support.

Indeed, it is interesting to realize that, almost in a paradoxical way, the development of youth-led, community-oriented projects requires a large amount of adult support. Without friendly adults to help them frame ideas, plan activities over time, make connections or go to distant places, there is little that young people can do on their own.

Unfortunately, the youth technology centers that we worked with did not seem to have the necessary infrastructure to support young people in the implementation of their projects. As a minimum, they would need either more personnel or a different kind of internal organization.

On the technical side, we realized that, although Clubhouses had all sorts of multimedia development technologies, the tools available were not necessarily appropriate for the

action and reflection dynamics of YAN. In some cases, they were too complex for young people to use. In other, they lacked the functionality we needed.

For instance, although video recording looked very attractive, the Clubhouse video editing software was extremely hard to be used by the youth themselves and required a level of adult support that, in our opinion, would be better used in other activities. From a YAN perspective, the tools available were very powerful in terms of features, but not necessarily empowering to our members. In most cases, the simplicity of digital photography made still cameras much more useful and appropriate to YAN projects.

In a way, since YAN members and facilitators were often creating diagrams, making community representations and taking notes, it would be great if they had at their disposal a special system that facilitated the implementation and management of those tasks. One could imagine, for instance, a young activists' toolkit with tools to make it easier to organize pictures and video snippets, to create simple web pages with images and audio descriptions, to maintain youth portfolios, facilitate communication with people outside the Clubs, draw personalized community maps, and more.

4.3 Third attempt: the consolidation of the model

The third attempt to implement the Young Activists Network happened during the fall of 2003 and the spring of 2004. It focused primarily on three Computer Clubhouses in the Boston area that had demonstrated interest in YAN: the one located at the Chelsea Boys and Girls Club, the one at the South Boston Boys and Girls Club, and the one at the Charlestown Boys and Girls Club, with which we had been working for over a year, already.

It is worth pointing out that Computer Clubhouses are not always associated with Boys and Girls Clubs. The fact that YAN ended up working with those particular sites was more coincidental than by choice.

During this phase of the experiment, we still interacted with the other YAN locations, but only occasionally and not as proactively as we used to in the previous phase. The only

exception was the collaboration that we maintained with the YAN initiative in Sao Paulo (Brazil), which was starting to receive more local support.

Being aware of the challenges identified in previous attempts to implement YAN, we thought it would be important to concentrate our efforts on Computer Clubhouses that were within our reach, learn as much as possible from the experience, and then try to disseminate our findings to the other sites.

The volunteer task force. Central to our strategy was the organization of a strong group of volunteers, the so-called "volunteer task force". Their goal was to support YAN at the different locations and, based on their experience, contribute to the creation of a website, materials and software tools to strengthen and consolidate the YAN model.

Fortunately, at that time my group from the Media Lab was taking the lead in a large volunteer-recruiting initiative for Computer Clubhouses in the area, and we could piggyback on that to try to get people for YAN. Still, we had to prepare promotional materials and organize a series of special information and orientation meetings for interested candidates at MIT, Harvard and the Computer Clubhouses. In the end, the effort paid off nicely and we were able to assemble a team with more than ten people, most of them Master's students from the Harvard Graduate School of Education, to help us with the different aspects of YAN.

The plan was to have the volunteers working in teams of two or three at each site. By being part of a small team, volunteers would always have somebody to share ideas with, split the work and make the difficult parts of the task more enjoyable. Teammates would also keep the project going in case a volunteer had to be absent for an emergency or extra school work.

The teams' first task was to get acquainted with their Clubhouse and, together with the local staff, define session times and plan the schedule for the first couple of weeks. Once they started working, we would be interacting via email on a regular basis and meeting face-to-face as a group about once every month.

In addition to that, youth facilitators were motivated to write journal entries for each session and actively contribute to a "wiki", i.e. a special kind of website that could be easily edited by anyone. Among other things, by going to the YAN wiki, volunteers could access the YAN calendar of events, find out more information about what was happening at different locations, add relevant links, and share materials or ideas that could be useful to the others.

As it is going to be discussed, the volunteer task force turned out to be extremely successful and provided conditions for us to try new ideas and improve the YAN model in many ways.

The experience in Charlestown

Building on the lessons learned from the previous Charlestown attempt, the goal of the current design experiment was to refine the YAN model and try to serve as a reference for the other Clubhouses that had just joined the network.

Sadly, the Arts Director with whom we had worked in the past ended up moving out of Boston and we had to find a new person at the Boys and Girls Club to compensate for her absence. Fortunately, the newly-hired Director was up for the task and even offered to host the YAN meetings in her new arts space, which was much bigger and less distractive than the older one. We also counted on a student volunteer from Harvard to help us out with the sessions.

Inspired by a personal conversation with Roger Hart earlier in 2003, rather than trying to work with the 13 to 15 year olds that used the building where the Clubhouse was located, this time we decided to focus mostly on youth from 10 to 12 years old from the other building and, with that, try to address some of the engagement and attendance issues that had never been totally solved in past YAN sessions. As could be informally verified in our coming activities, when compared with older teenagers, the pre-adolescents seemed to be more willing to collaborate with adults, did not have as many obligations, and still received more attention from their parents.

It is really interesting to see how youth usually change between 10 and 15 years old. Among other things, as they mature into adulthood, young people tend to become much more self-conscious and strive to try out new social roles and become more autonomous. In the case of YAN, it was important to keep that distinction in mind when organizing groups. Older youth usually did not like to be mixed with the younger ones, and younger youth tended to require a more hand-in-hand approach. However, the age groups could also work really well together, especially when older youth were recognized for their capacity and invited to help and orient the younger ones.

In addition to paying attention to the age factor, in this experiment we were also interested in finding better ways to expand the range of topics that youth would consider for their projects. Although tours of the neighborhood were fun, they tended to generate ideas like garbage on the streets, graffiti, etc. which related mostly to the physical aspects of the community. As pointed out by Hart in the conversation, perhaps the incorporation of a discussion about Children's Rights in the YAN sessions would help youth feel more inspired to bring other aspects of their lives to their projects.

As part of the planning, we reviewed the Boys and Girls Club calendar of events and sketched out the different things to be considered until the end of the year. We would be meeting with the youth every Tuesday from 6:00pm to 8:00pm. Doing work with youth at the end of the day is always tricky, but it was good to have a 2-hour slot and not have to comply with the 45-minute rounds that the other Club activities had to operate under. Moreover, we would have Mondays to do final preparations and remind the youth to come to the meetings.

The Children's Rights Poster project. On October 14th, 2003 fourteen youth from 9 to 13 came to attend the first YAN session of the year. After a brief introduction, two members from the previous YAN attempt talked about their experience. Then we asked everyone to describe their best memories of Charlestown and list the things they liked or did not like about the city.

On the second session we had 15 participants. Similar to what had happened in the previous YAN implementation, we split the group in three and each sub-group took a facilitator on a guided tour around a different part of Charlestown.

On the third session, after a brief discussion about rights and duties, we gave each member of the team a poster with the forty two articles of the United Nations Convention on the Rights of the Child (UNICEF 1990) written in a simplified language that youth could understand.

The group got very excited and immediately started reading and making remarks about things that they knew or did not know (Figure 9). One of the youth even added his own name to the title of the poster to reflect that those were his rights.

Figure 9 - Young people discussing children rights in Charlestown

Then, organized in 2 groups, we asked the participants to select the articles that were the most relevant to them, and create a little skit about those articles to be displayed on video to the other group.

The activity evolved well. The first group created a little skit about the child's rights to play, have access to education, and to be with friends. Much to our surprise, the second

group produced a skit about child abuse (article 34) and role-played a couple neglecting and hitting their child.

It was shocking for us to realize that such things happened to those children, to see that such a simple exercise could be so revealing and, worst of all, that we were not prepared to handle situations like that.

That experience led us to contact the local social worker afterwards. It also prompted us to organize a special YAN facilitator workshop about how to work with youth at risk. Unfortunately, when doing a similar activity at the Chelsea Clubhouse, the YAN members also ended up choosing the child abuse right as their most relevant one. That was really sad.

On the fourth session, the goal was to have the youth decide which community project the team was going to focus on. Unfortunately, the brainstorming ended up not evolving well and everyone left the session feeling frustrated for the lack of a project.

In a later discussion with the facilitators I realized that, since all of us were afraid to make suggestions and influence the youth's choices, the brainstorming session ended up getting too abstract for the youth. To make things worst, the adults were not necessarily in agreement about what constituted a good YAN project and ended up discarding some potentially good ideas raised by the youth.

In the end, the facilitators decided to suggest a project theme – the creation of a poster about Children's Rights in Charlestown – and hope for a more representative project in the future.

Fortunately, the young activists liked the idea and, by the end of November, had created a colorful poster highlighting their group's most relevant rights and how they connected to different resources around town.

In one of the poster creation sessions, we gave the youth a sheet of paper with four concentric circles. The inner circle represented themselves, and the outer circles represented the people who were important to them. We instructed them to add the

names of as many people as possible to those circles and we asked them to underline the ones who lived in their community, put a triangle besides the name of everyone older than 18, put a flower besides the female names, etc. (Figure 10).
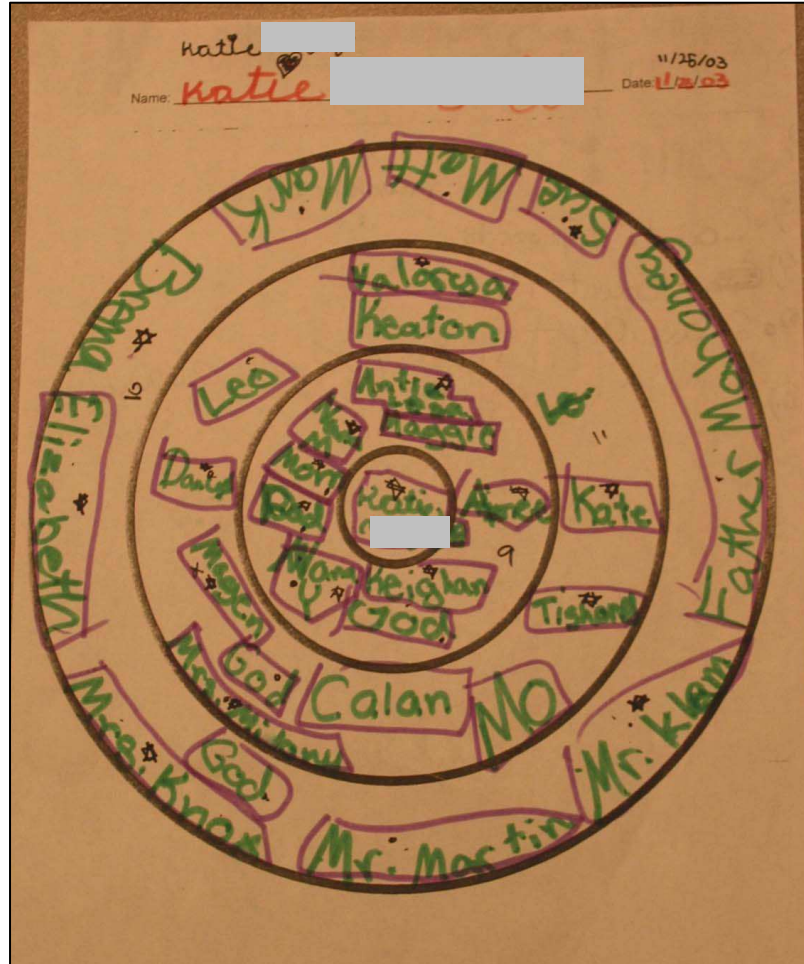
Figure 10 - The YAN social networking diagram

During that exercise, one girl asked if she could put her dog in the diagram. Another girl asked about God and decided to put him/her in all circles of the diagram. When she told that to the others, everybody else decided to include God in their diagrams.

In addition to the questions above, we asked a few specific ones that were more directly related to the project. In one of them, we asked whom the youth would distribute their posters to in case they only had 5 posters. In another, we asked whom they would ask for help in case they had 5 piles of posters to distribute. It was very interesting to see how

their answers shifted from parents and close friends for the first question, to teachers, priests and others for the second.

Above all, it was also fascinating to see how the diagram helped youth visualize how different people played different roles in their lives and get a better understanding of the importance of their community. Even though we did not run any precise analysis, the young activists had about 20 to 30 people in their diagrams, of which half were older than 18 and half were female. It would be interesting to see how the diagrams would change over time. I wonder if adult people would list young people in their social network circles.

On December 2nd, the young activists from Charlestown went out to distribute the posters in person to several stores, organizations and families in the area (Figure 11).
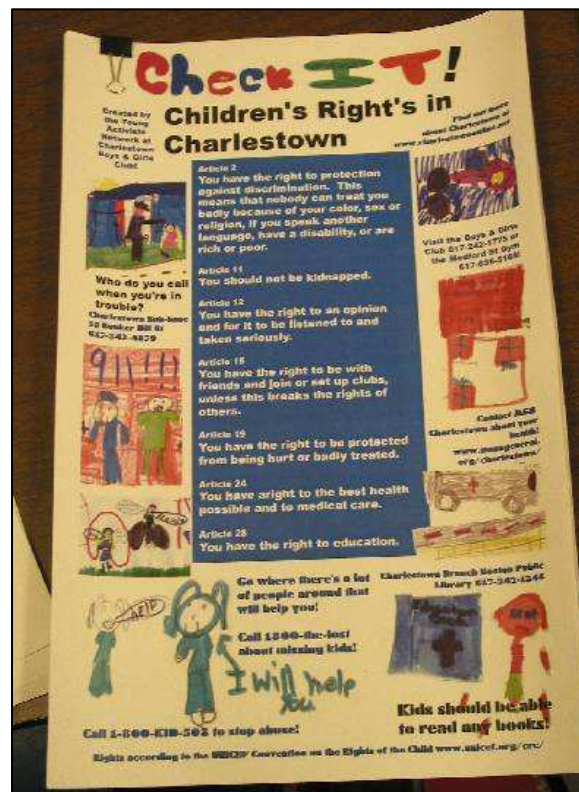
Figure 11 - The Charlestown Children's Rights poster

Eleven days later, they presented their work to young activists from Chelsea and South Boston in a special event organized at the MIT Media Lab. Preparing for that event turned out to provide a great pretext for the different teams to reflect about their YAN experience, document their projects and receive recognition for their hard work.

The Trash Olympics project. The energy generated by the activities of 2003 was still in the air when YAN Charlestown regrouped in February 2004.

This time we invited parents, youth and their friends to come to the first session. After a brief presentation by the more experienced YAN members, we decided to ask everyone to write down project suggestions. Even the two mothers that came to the meeting contributed a few ideas.

On the second session, despite a competing event at the Club and problems reminding youth to come to the session, we were still able to secure an attendance of six. The group voted for the most relevant ideas listed in the previous session and debated the pros and cons of each of them.

On a side note, it is important to notice that, in general, it was really hard to communicate with the youth when they were outside the Club. The facilitators called the youth each week to remind them about the session or to inform about any changes in schedule. Despite of that effort, quite often we had youth arriving late. Unfortunately, whenever young people missed a sessions, it was really hard to motivate them to get back to YAN.

As the young activists were split between a project about drunk drivers or street littering in Charlestown, we decided to spend a couple of sessions getting more information about those issues.

This way, sessions 3 and 4 were used to interview people on the streets. On session 5 we had a local policeman come talk to youth and answer their questions.

After considering the opinions from different people, the YAN members realized that, at least in Charlestown, the problem of garbage on the streets was more serious than the of

one of drunk drivers. With that in mind, they decided to organize a fun community event – the so called Trash Olympics – to both educate people and clean up the area.

During the month of April we did our best to help the young activists structure their ideas and prepare everything for the event. Among other things, we facilitated discussions about what needed to be done when, purchased supplies, and helped the youth refine the rules of the games they were creating.

Since the YAN session started to conflict with the Club's swim classes and the time was getting short, we decided to spread the facilitators during different days of the week and be more available to youth at their own schedule. It was great that two of the facilitators were staff and had to be in the Club throughout the week anyway. Despite a few communication challenges among the facilitators to keep everyone informed about what was going on, the new schedule worked extremely well. It even made YAN become more present in the youth's lives.

Although we still had a few ups and downs in session attendance, the youth were able to get everything ready on time for the event.

On the morning of Saturday, May 15th, the Charlestown YAN members opened the Trash Olympics banner in front of the Club and started announcing the activities. They had games in which teams competed to collect garbage around Charlestown, raced in trash bags, played bowling with recycled bottles, and more (Figure 12).

The only problem is that only 10 youth showed up for the event and many others could not come for lack of information or lack of parental authorization. In my opinion, we, the adult facilitators, could have done a better job promoting the event to local families, youth organizations, the press, and even some politicians.

Figure 12 - The Trash Olympics event in Charlestown

Unfortunately, we were so busy with other things that the Trash Olympics barely attracted anyone beyond the ones who were already involved with it. The good thing is that the youth were very proud about their event and did not seem to notice the lack of extra audience.

On May 17th, two days after the event, the softball season started in the Club and only 2 youth showed up at the YAN session. Together with the Clubhouse manager, they selected pictures from the previous sessions, wrote a script, and created a little documentary about the Trash Olympics development.

Finally, on Friday, May 21st, we invited the YAN members, facilitators and friends to an informal end-of-the-year celebration at the Charlestown Boys and Girls Club. At the event, we recognized young people's accomplishments, displayed the Trash Olympics video, and gave youth a certificate honoring their "community activism and commitment to young people."

The experience in Chelsea

According to Amato, Bash et al. (2000), "Chelsea is the poorest city in Massachusetts. Nearly half of the city's children under the age of 4 live in poverty. Chelsea leads the Boston region in unemployment, has the state's highest crime rate, and is home to an estimated 10,000 undocumented Hispanic and Southeast Asian immigrants. These problems are compounded by the fact that Chelsea's population is squeezed into fewer than 3 square miles. More than 30 percent of the population lives in one 10-block area of cramped, rundown dwellings."

After a couple of planning meetings to plan the initial sessions, the first YAN session in the Chelsea Boys and Girls Club officially started on October 23, 2003 with seven highly motivated teenagers who, in most part, had already done some sort of community-oriented projects in the past.

The Chelsea sessions happened every Wednesday from 6:00pm to 8:00pm and were facilitated by the local Computer Clubhouse manager, the Chelsea Boys and Girls Club Teen Director, and the two YAN volunteers who agreed to spend about 2 hours commuting to the Club for each session.

The first semi-project. Since this was the first time YAN was being implemented in Chelsea and the sessions had already started late in the year, the facilitators did not have too many expectations about what could be accomplished in the few weeks that were left until the YAN gathering event planned for the beginning of December.

As a starting point, the facilitators decided to spend some time to get to know more about the youth and build group spirit. Following in that direction, the first session was devoted mainly to introductions and a brief discussion about local issues.

The second session focused primarily on a community mapping exercise. Despite the distraction with the basketball tryouts going on next door, the session went well with each member pointing out where they lived, marking the areas where positive things happened, and also indicating the main shopping areas, pizza places, gang spots, schools

and other points of reference. Several YAN members were surprised to know that the volunteers had gone all the way from Cambridge just to work with them in Chelsea.

According to the plan, the youth-led neighborhood tour was supposed to happen on the third session. Ten young people showed up for the tour. However, the bus that they were going to use broke down and the rain prevented the group from walking. Instead, the youth ended up having a conversation about famous activists and voted for the issues that they considered the most relevant: gangs and teen pregnancy.

On the fourth session, despite the neighborhood tour appeal, only four youth of the initial group showed up. Some could not make to the session for being sick, and others did not receive authorization from their parents to walk around the neighborhood at night (the original tour had been scheduled for an earlier time).

Still, the facilitators opted to move on with the tour. They invited two younger youth from another Club initiative to join in and the whole group went out to explore Chelsea with their cameras. As part of the tour, the group also recorded neighborhood sounds using a special audio recorder and microphone lent by a Clubhouse mentor. The audio equipment proved to be a fun, easy-to-use way of recording interviews and capturing what was happening in the neighborhood.

During sessions 5 and 6 the facilitators struggled with the small youth turn out. In addition to that, most of the participants were now pre-teens and had not been present in the previous sessions. That made it hard for the facilitators to build on the prior session's experiences and brainstorm ideas for community projects.

Nevertheless, the facilitators organized an activity about Children's Rights similar to the one carried by the young activists of Charlestown a couple of weeks earlier. During the activity, the group got to the conclusion that there is a difference between having a right and being right. To some extent, gangs have the right to meet and be part of a group. That does not mean that they are allowed to disrespect the rights of others.

At the end, one of the girls created a script about child abuse and the team spent the rest of the sessions recording and editing it for the YAN gathering.

The teen pregnancy project. The second semester of YAN in Chelsea started in mid-February, when the facilitator team got together to discuss course of action and start spreading the word about the sessions.

The first session happened on Monday, February 26th, 2003. Thirteen youth came to the meeting, half of them being newcomers to YAN. After a brief introduction about YAN, the facilitators showed the video they had created during the first semester. As one of the facilitators wrote in her notes, "once the kids saw the video, they were hooked". For the remaining of the session, the group discussed how to attract more people to YAN and went out to the computers to create flyers which they later posted around in the Club.

The second session also attracted thirteen youth, although several of them were new. The facilitators asked everyone to fill in a worksheet developed by TakingITGlobal (2004) in which youth listed their interests, skills, and desires in preparation for undertaking a community project. Then, the participants were invited to create their "activist identities" by using the computers from the Clubhouse to transform the pictures the facilitators were taking of them into super-heroes of Chelsea.

On the third session, as a means to foster more youth ownership, the facilitators defined an overall meeting structure and had the young people assign specific tasks for each role. Among others, they identified and elected a "Secretary" to take notes, a "Videographer" to handle the camera and upload the snapshots to the server, a "Meeting Chair" to make sure the session ran smoothly, and a "Plan Committee" to plan the upcoming sessions.

The facilitators then compiled a list with the potential project ideas identified in the previous sessions, clarified questions, and asked each member to vote for the three issues that they would be interested in pursuing. The three main issues elected by the young activists of Chelsea were: teen pregnancy, drugs, and gangs.

The facilitators then organized the youth in teams around each issue, had them discuss why their issue was the most important, had a mock debate among the groups and, lastly, held a final vote. The overall winner was teen pregnancy. At the end of the session, everyone clapped their hands.

On the fourth session, the core group of teens that came to the previous sessions did not show up. The youth that remained were considerably younger and, although they all knew a teen who had become pregnant (for many it was a cousin, or even their own mother), the issue of teen pregnancy did not seem to connect as much with that group. To compensate for that, the facilitators tried to organize an Internet scavenger hunt for the participants to find out information about teen pregnancy, but it was hard to keep the order and the session ended without finishing that activity.

The fifth session had 5 participants; the lowest turn-out of the sessions thus far, with no teenagers present with the exception of one. Apparently, another program was going on at the same time in the Club and offered more direct incentives to the youth.

The facilitators were planning on having a teen mother come to speak to the group during that session. However, since she did not show up, they decided to brainstorm with you about potential projects. Many ideas were generated. Somebody even suggested that the facilitators should contact the older members to keep them involved and stress how important they are to the group.

After the session, the facilitators realized that, in order to keep the youth involved, they would have to minimize discussions, involve the young people in more action-oriented activities, and identify concrete goals for the projects as soon as possible. They also decided to start going to the Club one extra day per week to interact with the young people in a more informal way.

At the first informal session, two of the facilitators talked to some of the older youth that had left YAN, reminded them of their influence on the project idea, and brainstormed about what to do next. The youth suggested "Baby Think it Over", a program of the Boys and Girls Club that uses computerized baby dolls to help youth become better informed about pregnancy and childcare, and "ROCA", a local youth organization with a major emphasis on teen pregnancy. One of the girls in the group said her mother worked at ROCA and offered to call her. The facilitators talked to that mother and arranged a YAN visit to the organization. From that day on the older youth were back to the sessions.

On the sixth official session, the facilitators broke the participants up into three smaller groups of four and five, with a camera and a facilitator each. One group went out to interview other youth about teen pregnancy; one went to interview the Club's social worker about the Baby Think It Over program; and the third went to shoot some scenes with the computerized dolls. After that, everyone got back together to watch what had been recorded.

Then the group discussed what they would like to do next and everyone agreed upon organizing an event to raise awareness about teen pregnancy. At the event they would show the films they were working on and also have a bake sale to raise funds for a teen-pregnancy cause (Figure 13).

Figure 13 - Organizing the teen pregnancy event in Chelsea (MA)

At the next informal meeting, the facilitators worked with the young activists in the production of a movie for the event. According to them, the informal sessions seemed like a really good mechanism for building relationships with the youth. During the more formal YAN meetings it is usually hard to spend individual time building relationships. The informal meetings also serve as a reminder for the youth and ease the continuity problem. Meeting twice a week was very beneficial.

On May 10th, 2004 the young activists of Chelsea held the "Young Activists Teen Pregnancy Prevention Day" and transformed the Computer Clubhouse into a lively and well-organized information space that attracted over 50 people, most of them from the Club. At the entrance of the Clubhouse they had an information desk that directed guests to workstations displaying the Chelsea videos and an online quiz created by The National Campaign to Prevent Teen Pregnancy[28]. They also had one of the Baby Think It Over dolls for visitors to interact with (Figure 14).

Figure 14 - Girl at the YAN Teen Pregnancy Prevention Day

For the last meeting of the term, the volunteer facilitators edited the footage from the event and brought it to show the youth. They also made paper plate awards to present.

When they arrived at the Club, they were welcomed by their whole group with a surprise party with cake and balloons. The young activists passed a balloon around and each one took a turn saying what they where thankful for. Then they put on a dance performance that they were rehearsing for an upcoming talent show.

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[28] http://www.teenpregnancy.org/

The facilitators were touched. Their youth had seen the fruits of their own labor and were ready to go again on another project.

The experience in South Boston

South Boston is a traditional Irish-Catholic neighborhood of Boston that, for the past decades, has been deeply transformed by gentrification and an increased migration of people coming from diverse backgrounds. Even the few sessions that YAN developed there in 2003-2004 were affected by the consequences of that transformation.

Compared to the other Clubhouses that we were working with in the Boston area, the one located at the "Southie" Boys and Girls Club was relatively easy to access by public transportation. That made it relatively easier for us to recruit three students from the Harvard Graduate School of Education to support the local Computer Clubhouse manager in the development of YAN activities over there.

The first YAN session in the Chelsea Boys and Girls Club happened on November 20, 2003, a few weeks before the first YAN gathering at MIT.

Eight youth 10 to 14 came to the meeting. The group was a mix of black and Latino teens and white pre-teens. The youth of color were very recent arrivals to the Club, having come from Old Colony, a local public housing project, after the United States Department of Housing and Urban Development (HUD) withdrew significant funding for youth programs there.

The Computer Clubhouse manager estimated that this resulted in an influx of some thirty or forty new members. It should also be noted that the Club at that time did not have any Spanish-speaking staff members and was not used to dealing with such a culturally-diverse membership.

During the first meeting the groups informally segregated themselves according to age and race by sitting in different parts of the room. Nevertheless, the discussion was lively and involved both subgroups of youth. The participants had very strong political views

and knowledge of global political events. The Clubhouse manager printed a large map of the area using the Clubhouse plotter and the group discussed a possible route for the tour.

Many of the youth felt that adults do not listen to kids, and gave examples from their home and school life. One member discussed a project that she had been involved in, in which they identified a place that needed to be cleaned. They wrote letters and even got a promise of action from the responsible agency. The agency had not fulfilled its promise, prompting them to act again.

This was a very good example of activism and served as a reminder that people often say yes when they do not plan on doing anything, that persistence is necessary to affect change, and that organized voices are more easily heard.

On December 3rd, the group led the facilitators on a tour around South Boston. They shot video and took still images. The dynamic of the group was a little unruly. The racial split became more evident, with the older members of color banding together. Moreover, many of the participants did not seem to be engaged in the trip. They were distracted by boy-girls dynamics and seemed to have most fun doing "vanity" shots of themselves emulating celebrities.

After the tour, the Clubhouse manager ordered pizza and the group watched the video footage together. Some of the issues that came up during the tour were violence and bullying, racism, garbage in the parks and other public spaces, and harassment by the local police.

The next session was the gathering event that we had already scheduled with the three Boston-area YAN sites right at the beginning of the year. By the time of the event, the split was undeniable and only two young members came to MIT.

According to the facilitators, although that event provided a deadline that was useful for some sites, it may have been premature for the Southie group as they had not had sufficient time to prepare a project or to form their group identity. Indeed, the two young activists that came to MIT were not feeling comfortable at the event and had to take some time outside on the streets.

That was the last time that the South Boston YAN had any teens in the group. However, it is important to point out that many of the members that stopped coming to YAN, stopped coming to the Boys and Girls Club altogether.

The bullying project. The second semester of the Young Activists Network in South Boston began on February 19th with sessions every Thursday from 7:00pm to 8:30pm.

The first session started with a small group of five younger members that, at first, seemed homogeneous. They discussed several issues and decided to pick bullying. Bullying was a current problem in the South Boston Boys and Girls Club, and it seemed exacerbated by racial and socio-economic dynamics.

The group decided to construct a bulletin board focusing on the issue of bullying outside of the Computer Clubhouse. The 4'x8' space would be used to establish a permanent YAN presence in the Club and would have its contents periodically changed by the local young activists. According to one of the facilitators, the bulletin board seemed like a good way to do an "easy" project that would involve research and design. Depending on the interest generated, the group could then decide what to do next after the board was completed.

However, the group soon realized that the construction of the bulletin board would be more complicated than expected. After some brainstorming and Internet research, the participants ended up splitting into two sub-groups to focus on specific tasks. One would be responsible for the design of the bulletin board layout, and another for researching and producing the contents that would be posted on the board.

The second YAN session in South Boston was filled with polemic and internal disagreement. Due to problems in communication, the adults that coordinated the second session got confused about the group's roles defined in the previous session and asked both youth groups to focus on the design of bulletin board, each one concentrating on half of the board.   By the time they realized that the actual breakdown was design vs. research, the second group was already invested in their own design. They got the groups

together, explained that the mistake was from the facilitators, and tried to get the two groups to compromise.

Although the youth seemed to be able to compromise on using what the first group had come up with the week before and incorporating the new ideas in, somehow in the middle of the section the two groups started arguing and insulting one another.

According to one of the adults, the conflict was less about the actual issues and more about the way youth were treating each other and not listening to what was being said. The facilitators tried to intervene, emphasizing how much work the youth had already done and how important their project was for everyone. Still, the situation ran out of control and the participants ended the session saying that they would not come back to YAN.

In the days that followed that session, the facilitators exchanged several messages trying to figure out what to do. They decided that they would like to be able to get the youth together again and talk it out. Resolving issues among themselves was a valuable skill. They needed to learn how to listen to each other, empathize, compromise, and know that handle that kind of situation in life.

During the following week the session had to be cancelled due to Computer Clubhouse being closed. That gave the young activists some time to cool off and allowed the Clubhouse manager to talk to them individually.

On March 4th, when the facilitators finally got the youth together again, they all seemed willing to talk. The session began with everyone explaining what they felt about the last meeting and what they wanted for the current meeting. The four members present were all willing to compromise and negotiate.

The facilitators brought out the old materials and did a quick mock up of what they thought the board should look like. Then each youth took a turn adding and commenting. In the end, the group decided to save some of the material from the previous design and add some new one. The facilitators left the session feeling that progress had been made and that YAN had effectively been saved.

On March 11th, the young activists finished their board. It was filled with stop signs with questions regarding bullying on them. They also managed to use the plotter to print out a very large banner that read "Young Activists Network" and "It's not cool to be cruel". Finally, they added two poems written by members, a list of Internet resources and a list with the name of the participants.

On March 18th, none of the volunteers could come to the YAN session in South Boston. The Clubhouse manager decided to start planning a fun trip with the group but, due to changes in the overall South Boston Boys and Girls Club and other local challenges, South Boston YAN ended up losing steam and stopped meeting before that happened.

The experience in Sao Paulo (Brazil)

Inspired by the Young Activists Network, two mentors from the Dom Bosco Computer Clubhouse in Sao Paulo (Brazil) decided to create a youth technology center in their community and use it to support the youth activist and environmental education initiatives that Juventude Ativa ("Active Youth"), their local youth group, was already developing in the area.

Jardim Antartica, the place where the two mentors lived, was an underserved community that suffered from problems such as alcoholism, drug trafficking, litter on the streets, and lack of infrastructure (Figure 15). To make things worse, many residents lived on shacks that were often flooded by the polluted creek that crossed the region.

In order to do something about the situation, Juventude Ativa organized street clean-ups, food drives, community meetings and other events. By having access to technology, they expected to become more effective in their action and be able to collaborate with other youth groups from the city. Unfortunately, the local public telecenter provided limited support for their activities and the Computer Clubhouse was located almost two hours away by bus from Jardim Antartica.

Figure 15 - View of Jardim Antartica (Sao Paulo, Brazil)

After about one year of hard work, in April 2004 Juventude Ativa managed to open their youth technology center with 14 used laptops and a digital camera.

Despite the initial excitement about the computers, the space lacked a regular person to take care of it, and did not have printers or access to the Internet. As a result, it ended up attracting mostly local youth 4 to 12 years old who went there to play games.

In October 2004, Ana Maria Lima, a graduate student from the Catholic University of Sao Paulo, decided to start a YAN initiative in Jardim Antartica. As part of her research, which later became her Master's Thesis, Lima worked with a group of six 9 to 12 years old in the development of a participatory action-research project that addressed a community need that was relevant to them (Lima 2005).

Following steps very similar to the other YAN sites, the group started with a youth-led tour of the neighborhood where they took pictures, highlighted different aspects of their community and interviewed local residents.

Concerned about the issue of garbage being thrown on the creek and on the streets, the young activists decided to organize a community meeting with the local adults (Figure 16). At the event, they brainstormed about possible alternatives to the garbage and discussed the need to promote more community awareness. Although the participants enjoyed the meeting, they expressed their frustration for the lack of adult attendance.

Figure 16 - Young activists from Sao Paulo inviting people to their meeting

On the following session, the group went to the public telecenter of the region to research information about garbage recycling and to send an electronic message to the city government reporting the problems in their community. They also used the computers to create a little form to be used in a survey they ended up doing about local littering habits. Unfortunately, no one from the city government ever replied to their message.

In the end, the young activists decided to collect garbage by themselves and sell it to the local recycling facility. They used the money earned to purchase a snack and felt pretty good about all they managed to accomplish during the project.

One of the things that became apparent in Lima's research was the challenges that members of her group faced in relation to technology. Many of the young people she

worked with were illiterate and, despite having some physical access to computers and knowing how to use the mouse, it was extremely hard for them to use the technology to retrieve information or express themselves. Although the Internet was something appealing to them, their experience with the Web tended to be limited and frustrating. As part of YAN, the tools they ended up using the most were the audio recorder and the digital camera that the researcher brought to the sessions.

Another interesting aspect of Lima's research was the way she positioned YAN in relationship to the other organizations of the community. Due to the difficulties imposed by the Juventude Ativa technology center, the young activists ended up having their sessions in different parts of the community, including the local public telecenter.

On the one hand, that approach freed the group from specific limitations imposed by the technology center, created opportunities for the youth to explore their community in a different way, and fit better into the young people's lives. On the other hand, by not having YAN incorporated by any of the local organizations, the Young Activists activities stopped as soon as the research was completed. Ideally, it would be great if the different organizations the young activists interacted with assumed more ownership over the project.

As will be discussed, issues of inclusion, lack of appropriate technologies for youth, dependency on partner organizations, and sustainability were pervasive to all the different attempts to implement YAN and ended up leading to the more organic approach to youth participation proposed in the next chapter.

The development of the Young Activists Toolkit

In parallel to carrying out sessions with youth at the different sites, the members of the volunteer task force also contributed to the implementation of a series of tools and prototypes that aimed at reducing some of the difficulties inherent to the implementation of the YAN model.

It was interesting to realize that, even though many of the Young Activists Network sites had more infrastructure than the average community technology center, with cameras,

audio recording equipment, multimedia software, Internet connection and the like, in many cases the technology available was not appropriate for YAN activities. Although we wanted young people to produce some sort of documentary or presentation telling the story of their projects, in many cases tasks such as video and website production were so complex that they ended up consuming too much of the project's time and diverting the young participants' focus from the more relevant social aspects of the initiative. In other cases, the tools simply did not offer the required functionality and had to be compensated with ad-hoc solutions created by the facilitators.

The YAN Box. The first tool to be implemented was the "YAN Box". It consisted of a portable archive box that contained pretty much all the support materials that would be needed for a YAN session: printed forms, large sheets of paper for group discussions, pencils, markers, glue tape, etc. It also contained individual folders to store the materials produced by the young activists, and session folders where the diagrams and notes generated during group activities could be saved (Figure 17).

Figure 17 - The YAN Box

Among other things, the YAN Box made it much easier for facilitators to transport materials from one room to another, prepare for sessions, and check what has been done and when.

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The YAN activity portfolio. One of the central elements of the YAN Box was going to be a portfolio with potential activities that facilitators could develop at different phases of the youth-oriented participatory project development (Table 4). Since each YAN site and group was different from one another, we wanted something flexible enough that could serve as inspiration for the facilitators.

Phase in the project lifecycle	Example activities
problem identification	• personal observations • Rights of the Child discussion • neighborhood tour
analysis	• neighborhood mapping • community interviews • expert presentations
planning	• brainstorming • what? where? when? who? how? • personal social networking analysis
action	• creation of flyers, websites, commercials • organizing community events
evaluation and reflection	• discussion at the end of the sessions • story production • celebration and meetings

Table 4 - Sample activities for each phase of a YAN project lifecycle

On the prototype that we started creating, each activity had a title, a description, the phases of the project lifecycle in which it could be used (problem identification, analysis, planning, etc.) and also examples with tips highlighting real situations in which that activity had already been tested and how it could be extended depending on the technologies available at the site. For instance, although the neighborhood tour did not depend on any technology in particular, the use of maps and cameras could greatly enhance the activity.

The YAN website. During the summer of 2004, an intern and I started to design a website to facilitate the implementation of YAN at different locations and make it easier for individuals to contribute their own ideas and suggestions (Figure 18).

Figure 18 - The YAN website prototype

The latest prototype that we created had a section for young activists and another for facilitators. The young activists section contained information about YAN, the people who were part of the network, the projects that each person had participated in, the different YAN sites, upcoming events, and more. The "Facilitator's Corner" had a link to the YAN activities' portfolio, information about how to organize sessions, and additional resources.

The neighborhood mapping tool. In the spring of 2004 we had the opportunity to work with three students from an MIT technology design class in the creation of a prototype of

a neighborhood mapping tool for kids. The goal was to create a tool that would be sufficiently simple for YAN members to use and yet powerful enough for them to represent and compare personally meaningful aspects of their communities.
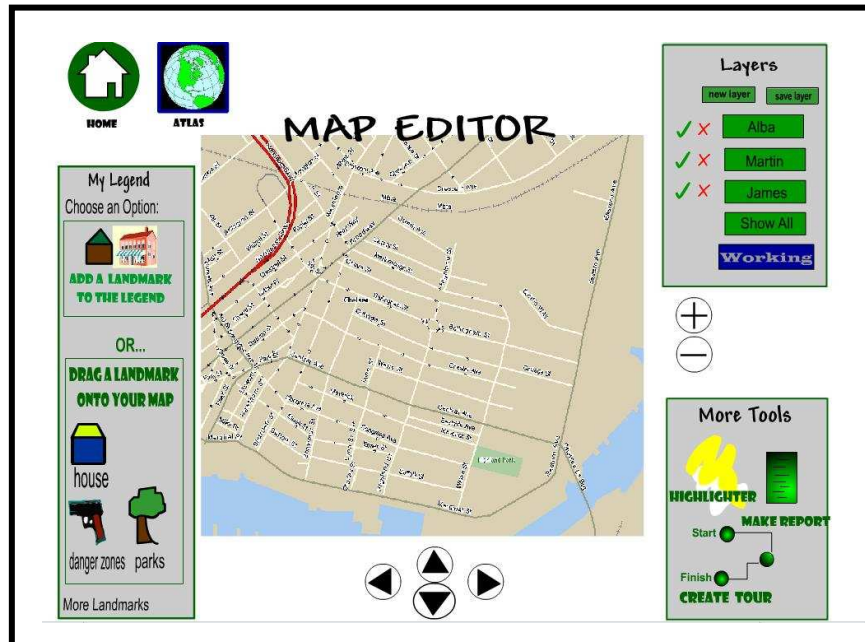
Figure 19 - The YAN neighborhood mapping tool prototype

After a series of focus groups with youth and facilitators from several YAN sites from the Boston area, the students came up with a basic prototype in which users added layers on top of a base neighborhood map that they could import into the program (Figure 19). Layers could be turned on or off and contained personal landmarks and regions that users created using a simple tool. In addition to that, users could add picture, audio and text notes to the different layers and print the final map in large scale by combining multiple printed pages side-by-side.

The Graphical Wiki. The neighborhood mapping tool would be one of several components of a larger online multimedia collaborative system specifically created to support youth in their projects. At its core, the system would be similar to a "wiki", i.e. it would allow young people to collaboratively create web sites that could be edited online, without the need to upload the pages from a client computer to a server.

While traditional wiki sites like the Wikipedia[29] are essentially text-based and require the usage of special text tags in the formatting of the web pages, the YAN wiki would allow users to create web pages using a graphical interface similar to a Microsoft Word and would make it easier for young people to integrate sound and video snippets, photo galleries, animations and even the maps created as part of their projects (Figure 20).
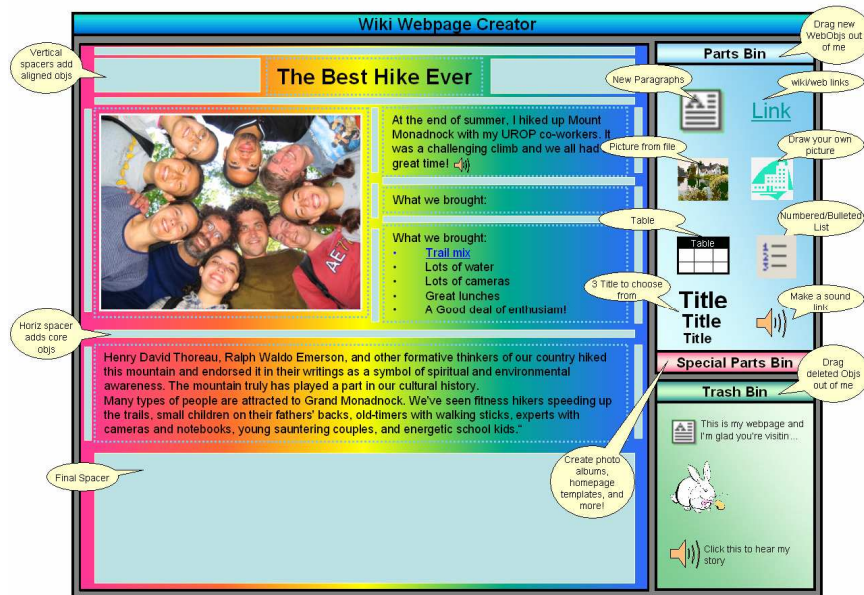
Figure 20 - The YAN Graphical Wiki prototype

Even though we managed to recruit a group of MIT undergraduate students to work part-time on different aspects associated with the Graphical Wiki, the project turned out to be more complex than expected and would require more time and resources that we would be able to commit within the scope of this thesis.

Only today, with the recent advances in media editing and sharing of the Web 2.0, are people starting to see websites combining audio, video, images and text in a way that is more accessible to non-technical users. However, even those sites still have a long way to go to achieve the level of usability that we intended with the YAN Graphical Wiki.

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[29] http://wikipedia.org/

Challenges and lessons learned

The third YAN attempt described above was extremely rewarding and productive. For about 9 months, we had a team of highly skilled and engaged volunteers helping implement youth-led, community-oriented projects in our four sites. Counting on the external support, several youth groups were able to take their projects to the end and even produce a little documentary or presentation to tell their story. The constant and reliable support also allowed us to refine the YAN model and get a better understanding of the challenges inherent to it.

In the end, working with Clubhouses in the same region turned out to be positive for all. Among other things, it allowed us to organize Young Activists gatherings where young people could show their projects, facilitated visits and information among the different sites, and promoted a network feeling that was harder to convey at a distance.

In addition to that, the proximity of the sites made it easier to identify patterns in the sessions and in the way projects evolved. It also made the facilitators realize that many of the challenges faced were not unique to a particular site and could be seen in the other youth organizations, too.

Among other things, we became more aware of the enormous differences that existed between youth ages 10 to 18, our original audience, and realized that, in most cases, the YAN approach was a better fit to the activists who were between 10 and 13 years old.

To some extent, constraining our audience to youth ages 10 to 13 was not necessarily bad. As discussed in the background chapter, that is a critical age range in which young people begin to see themselves as individuals and start trying to figure out their role in the broader society. Moreover, by working with youth at that age they would hopefully remain engaged with their communities as older teenagers and also as adults.

Nevertheless, it would still be important to figure out appropriate ways to work with older youth and create better mechanisms to connect them with the communities they are part of. In the What's Up Lawrence initiative described in the next chapter, we ended up

working mainly with youth 15 years old and up, but there is still a lot that needs to be done in order to achieve a good way of doing that.

The YAN experiments also helped us learn that youth engagement with the Young Activists Network seemed to be a function of personal commitment, quality of the sessions, and certain attributes of the environment.

In terms of personal commitment, youth should realize the importance of their contributions and acknowledge their responsibility as members of their group. We could help them realize their role, but the final acknowledgement had to come from their side.

As for the quality of the sessions, YAN taught us that best meetings with youth tend to be both fun and serious at the same time. In order for that to happen, YAN sessions should have concrete goals, emphasize action and meaningful discussions, be respectful of group dynamics, provide time for bonding and relaxation, and be clearly situated within the larger scheme of the project.

And concerning environmental aspects, among other things, the space of the sessions should provide for non-interrupted group discussions and activities, and session times should compete as little as possible with other activities the participants are already engaged with.

From a broader, project lifecycle perspective, rather than concentrating all the motivation of the initiative in a goal that stood several weeks away, we learned that it would be probably better to split the project into smaller sections, each of them with a meaningful and concrete outcome that would hopefully contribute to building motivation along the way. For instance, young people could organize a photo exhibit to the community right after their neighborhood tour, the team could be taken to visit special places or organizations after a certain number of weeks, individuals could create a logo for their team, implement a short-term community service project, etc. Along the same lines, the organization of end-of-the-year events turned out to provide a good pretext for young people to reflect about their project and produce documentation about it.

As lessons like the above became more apparent, we started to implement the tools and materials described in the previous section. However, while on the one hand the YAN model seemed to be improving well from one design experiment to another, on the other hand we started to become more aware of the large cultural and organizational challenges that lay ahead of us.

On the cultural dimension, the YAN experiments made it clear to us that the idea of involving youth in decision making and community change was so abstract in society that a great deal of effort had to be invested not only to making projects more concrete and engaging to youth (Percy-Smith and Malone 2001), but also to convince adults and organizations about the importance of our work. As Giertsen pointed out, "successful participation requires a paradigm shift among organizations, as they reconceptualise their role as not working for but with children" (2001, pg.17).

By reflecting back about my interaction with different organizations, I noticed that "youth activism" tended to be perceived as something confrontational or disruptive, almost comparable to "young troublemakers" or "rebels". That was not the image that we wanted our young members to be associated with, and that was not something that many adults, government offices, foundations and other institutions would feel comfortable about supporting.

Rather than placing young people against adults, our focus on activism aimed at stirring in young people a more critical, active and constructive perspective about the places where they lived and we wanted the community to recognize the value and contributions of the young generation.

Unfortunately, the concept of "youth activism" did not seem to convey that message. That is one of the reasons why I decided to change the focus of my research to the broader, more receptive notion of "child-friendlier cities" and that is one of the reasons why ended up starting the What's Up Lawrence initiative described in the next chapter.

The YAN organizational challenges became obvious when in the summer of 2004 most of the volunteers we had been working with returned to their hometown after graduation

and we were unable to recruit more people to replace them at the different YAN sites. That would make it impossible for us to continue our work.

Indeed, as the YAN experience had already taught us, even with better tools and methodologies, the most important element of the Young Activists Network was the quality of the time and support provided by the adults who worked with the youth. Young people need adults to help them frame their ideas, learn new things, make connections with other organizations, provide moral support and get them to places beyond their reach.

However, the reality of our partner community organizations was such that, due to the issues of funding, understaffing, and pressures from different priorities, even the organizations that were interested in YAN could only free 3 or 4 hours per week for the project, and could not afford to commit one adult for each 5 youth that came to the project.

Even though we recruited university volunteers to help things out, we still had to rely on our contacts in the partner organization – usually the Computer Clubhouse manager or the Arts Director – to take care of the local aspects of the project. As our ambassadors, they guaranteed space and resources for the sessions, recruited youth, resolved the local administrative issues, helped plan and run the activities, drove youth around and provided information about how things worked in the community.

Although the connection with of those ambassadors was essential for the projects, there was only so much they could do with the time and support that they had at their disposal. As a result, Young Activist Network projects had limited outreach to other organizations, families and members of the larger community.

As a matter of fact, limited community outreach was a problem that also affected other initiatives besides YAN. For instance, as pointed out by a Boys and Girls Club dance teacher, it seemed that we were all competing for the same few youth who were already part of the organization. What made things worse, she said, was that those youth usually came from well-structured families and were already busy with a variety of things. The

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young people who actually needed most guidance and support "were still out there on the streets" and many of them did not even know that we existed.

In retrospect, it feels as if we were expecting too much out of the youth technology centers we had partnered with.

As seen from an empowerment theory perspective, YAN managed to do a good job at the individual level by helping young people feel more confident about themselves, learn important social and technical skills, and also put their community-oriented ideas in practice.

Indeed, despite the obstacles, YAN managed to create spaces in which youth and adults could have in-depth conversations about life and collaborate in the development of meaningful community projects. That was something that neither youth nor adults were used to doing and, as reported by several of the adult facilitators, was the key element that kept them motivated to spending so much effort in that work.

However, even with all the effort invested in the projects, our partner organizations and ourselves did not seem empowered enough to reach out to the different people and organizations that would be required to support youth in their community projects. We managed to take young activists to visit places, talk to professionals from different fields, but much more would be needed to sustain and expand the YAN work.

Almost in a paradoxical way, our efforts did not quite seem to fit well either into the lives of the youth or into the organizations we were working with. While on the one hand it was hard for youth technology centers to support YAN, on the other hand it seemed that youth and facilitators were always trying to adapt to and comply with the times and structure of the particular center.

If the goal was to empower young people and provide them with broader and more sustainable opportunities to participate in society, we would have to start thinking outside the youth technology center "box" and develop a more inclusive and community-wide approach to youth participation.

As it is going to be discussed in the next chapter, perhaps rather than concentrating all of our efforts in one particular organization, a better approach would probably be to start by recognizing the positive youth-led initiatives, formal or informal, that already existed in a particular community and provide them with the tools required to promote their activities, learn from one another experiences and benefit from the resources that were available to them.

5. The What's Up Lawrence initiative

After two years developing the Young Activists Network, in September 2004 I realized that, in spite of its many successes, that initiative still had several open challenges that would prevent it from being implemented in sustainable and scalable ways. In order to compensate for those challenges, I started looking for alternative approaches. In particular, on the theoretical side, I started looking for ways to engage young people in youth-led, community oriented projects that:

- could be perceived as more inviting to adults and partner organizations;

- did not compete as much with other activities that young people were already engaged with;

- facilitated the communication among youth, and between youth, supportive adults and community organizations;

- could spread more easily and benefited as much as possible from the resources and opportunities already available; and

- did not require extraordinary effort from the youth technology centers we were working with.

Fortunately, while reviewing the youth participation literature, I ended up stumbling into some of the references written by Lynch and Southworth concerning "Educative Cities" (Carr and Lynch 1968; Southworth 1970; Southworth and Southworth 1981). As explained in the background chapter of this thesis, the educative cities movement aimed at uncovering the educational potential of urban centers by, among other things, creating trails, adding signs, and producing other appropriate materials that made it easier for young people to navigate the urban space by themselves and develop a better understanding of how things worked.

Although the educative cities initiatives failed to engage youth in the decision-making, they offered low-barriers for inclusion, required relative low-effort from local

organizations, and helped young people become more aware of the resources that were available to them.

In my mind, it would be great if we could use technologies to create a more participatory version of educative cities in which youth themselves contributed meaningful information about the places where they lived. The way I imagined it, the new initiative would have the potential to, among other things, provide new ways for youth to engage more actively with their neighborhoods, help other youth and adults learn more about the area, and facilitate the recognition of young people's perspectives about the city.

As seen from an empowerment theory perspective, YAN had done a good job of helping youth technology centers empower individual youth. However, YAN failed in its attempt to empower the actual centers. Based on empowerment theory, for youth participatory initiatives to succeed they have to focus not only on the young people and the way they are supported by the youth organizations, but also on the way youth organizations managed to connect with other organizations and the broader community in order to sustain and expand their work.

While on the theoretical side I was starting to visualize an interesting alternative to the YAN model, on the practical side I needed to find a good community partner to help me with the youth organizing piece of the work so that I could focus my time on the implementation of new technologies to facilitate the implementation of the new approach.

Although the YAN design experiments had made the case that the lack of appropriate technologies was only one among several, perhaps more important issues that had to be addressed in the implementation of youth-led, community-oriented projects, I knew that the development of specific tools could make a big impact in bringing the idea of child-friendlier cities closer to reality.

The setting. After several months looking for youth organizations in the Boston area that developed community-oriented activities in the spirit of child-friendly cities, in December 2004 Professor Lorlene Hoyt from MIT introduced me to Movement City in Lawrence, MA.

Movement City is an after-school program affiliated with Lawrence CommunityWorks, a nonprofit organization dedicated to the economical, the physical, and also to the social revitalization of the City of Lawrence, MA (Traynor and Andors 2005).

According to the census of 2000, Lawrence is one of the youngest cities of Massachusetts and one of the poorest of the country: 32% of Lawrence's population is under 18, and 31.7% of those live below the poverty line with limited access to community services and benefits. In addition to that, a majority, 84%, of public school students are minorities, mostly Dominican and Puerto Rican, many of whom have recently immigrated or moved to the mainland United States and struggle with linguistic isolation, low educational levels and scarce employment opportunities.

Movement City provides young Laurencians ages 10-19 with a range of activities that include school support and professional development in areas such as technology, fashion design, dance, creative writing, music production, and others.

Among its goals, Movement City tries to engage youth in local projects that encourage them to improve the region and help them connect with the larger community. In particular, Movement City organizes a series of parties and events throughout the year for parents, relatives and friends from all ages and backgrounds to celebrate the latest achievements from its members or to raise awareness to specific community issues.

Movement City's action orientation, community involvement and respect for youth are apparent in everything they do. Fortunately, the director of the organization became interested in my ideas concerning the development of new technologies for child-friendlier cities and we decided to work together to make them happen.

5.1 Preliminary attempt: the Building Blocks 2005 summer program

The first collaboration between Movement City and the Media Lab happened in 2005 when I helped organize the Building Blocks 2005 summer program in Lawrence. The main goal of that initiative was to help youth develop leadership skills while developing community service projects in some of Lawrence's most underserved areas.

When I joined the project, Movement City had already secured stipends to work with 16 young people 14 to 18 years old, four days a week for 6 weeks. From 10:00am to noon, the youth would be organized into two groups: the so called "Youth Activity Researchers," whose goal was to survey youth around the city and create some sort of youth guide to Lawrence, and the "Youth Event Organizers", that aimed at organizing block parties and community events to promote community life and highlight the local youth talents of Lawrence.

From noon to 3:00pm, the two groups would merge into a larger "Building Blocks" team whose goal was to go out to 5 of the most underserved parts of Lawrence, distribute flyers about youth programs and opportunities available in the city, clean up streets and public spaces, and also organize games and fun activities for the local children.

From a research perspective, I aimed to learn more about Lawrence, get more experience working with Movement City, and try out different technologies within the context of the community projects being developed. Hopefully, the Building Blocks experience would help me refine the ideas for my thesis and provide with a good enough base for me to decide which technology to focus on.

At that time, I was trying to decide among two different kinds of technologies. One of them was the use of mobile devices such as cell phones or PDAs in the implementation of youth-led, community oriented projects. Nokia, a large cell phone manufacturer and sponsor of the Media Lab, had kindly donated 5 telephones with still image, video and audio recording capabilities to be used as part of this research. It would be interesting to see, for instance, how useful those phones would be in helping young people record interviews, register community life and document the evolution of their projects.

The Building Blocks summer program would also serve as a good context for the investigation of ideas related to Internet-based telephony, or Voice over Internet Protocol (VoIP). Inspired by the work of Community Voice Mail and the Yellow Arrows projects described in the background chapter, I wanted to see if it would make sense for young people to have a special telephone system that made it easier for them to exchange

messages with their friends or record information about different youth groups or points of interest of the city.

In order to do that, I implemented a rudimentary VoIP system that provided young people with voicemail boxes and allowed them to create voicemail groups for their friends and relatives. By dialing a group extension, one could send a voicemail message to the group participants, find out more about the group, and even play a public announcement recorded by that group.

In spite of the challenges with logistics, group dynamics and time constraints, the different youth groups managed to achieve meaningful outcomes in their respective projects. The larger Building Blocks team succeeded in reaching out to youth and families of four of the most underserved areas of Lawrence (Figure 21).

Figure 21 - Building Blocks 2005 street clean up

Moreover, the Youth Activity Researchers managed to survey 176 young people and presented a summary of their findings in a special "press conference" attended by youth and representatives of Lawrence CommunityWorks and of the City of Lawrence government (Figure 22).

Figure 22 – The Youth Activity Researchers press conference

Finally, the Youth Event Organizers successfully organized a barbeque event with fun activities for the children who lived in a local housing project. They also organized a large block party in downtown Lawrence with more than 10 local dance and music groups and over 150 people in the audience (Figure 23).

Figure 23 - Youth Event Organizers block party

At the end of the program, we got together with the youth and asked them what they had learned as part of Building Blocks. Among other things, they said the program had helped them to become more confident talking to people on the streets and expressing themselves in a group context, to know parts of Lawrence they had false preconceptions about, and to make new friends.

Challenges and lessons learned

The Building Blocks 2005 summer program provided me with a rich opportunity to become acquainted with Lawrence and Movement City, and learn important lessons for my future work.

It was valuable to work with young people in the development of the youth survey, get to know more about how Lawrence is perceived by its young residents, and find out more about what it takes to interact with the government to obtain support for block parties and other activities.

In particular, the youth survey was revealing of how far Lawrence is from becoming a friendly city for its young residents (Table 5).

If only 29% of the respondents between 13 and 17 years old believed that Lawrence provided youth with good perspectives for the future, it seemed clear that the government and other organizations of the city should do something urgently to change that situation and show youth that they care. In my opinion, it would be great if surveys like those happened more regularly and at different cities to highlight how things evolve over time and provide means for comparison among regions.

On the organizational side, Building Blocks validated several lessons that I had already learned from YAN: that implementing community-oriented projects with youth requires a lot of on-demand planning and logistics, and that young people need a lot of adult support to help them organize their own ideas and develop their projects.

- In the summer of 2005, the Youth Activity Researchers surveyed a total of 176 people. Of those, 52% were female, 31% were between 6 and 12 years old, 32% were between 13 and 17 years old, and the remaining 37% were all older than 18.

- Only 35% of the surveyed believed Lawrence had a positive image as a city.

- Only 21% of the youth 13-17 believed that in Lawrence young people's ideas were welcome and considered.

- Only 29% of the youth 13-17 believed that Lawrence was a city full of interesting people and fun things for children and youth.

- Only 29% of the youth 13-17 believed that Lawrence offered enough services for children and youth. That is perhaps why only 19% of the surveyed said they used the bus to move around in the city and 62% of them travel around by foot.

- Only 12% of the youth 13-17 believed Lawrence was a safe and peaceful city for children and youth.

- Only 29% of the surveyed believed that Lawrence provided young people with good perspectives for the future.

- Only 11% of the youth 13-17 used the Internet to find out what was happening in the city. For them, the most common source of information was talking to friends (68%), followed by the newspaper (34%) and the TV (21%).

- However, 87.64% of the surveyed believed young people can help make Lawrence a better place for children and youth.

- 57% of the respondents would like to receive news about what is going on in Lawrence for youth.

- 42% would like to be part of a group to organize youth events and activities in Lawrence.

Table 5 - Major results from the Building Blocks 2005 youth activity survey

However, Building Blocks also showed me that summer programs can provide a good opportunity to work with youth for long periods of time, build team spirit, advance projects and set things in motion for the school term when people are usually not as available.

One of the biggest differences between YAN and Building Blocks was the fact that the participants of the latter were paid to be part of the program. On the one hand, that attracted youth who otherwise would not be interested in community projects and made sure young people would be present at most sessions. On the other hand, stipends did not prevent the young participants from feeling bored or frustrated with some of the activities developed. In my opinion, one has to be careful about not taking young people for

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granted and letting stipends compensate for the lack of better planning. That may have a strong impact on the way they relate to money and jobs in the future.

On the technology side, the cell phones turned out to be useful in the documentation of the projects and in facilitating communication between the youth groups while they were in different parts of the city. Every day young people returned to Movement City with dozens of pictures and video clips collected on the street. In some cases, they even used the phones to record interviews with youth and community leaders.

Although the idea of implementing a cell phone-based neighborhood mapping tool for kids was a good candidate to be implemented as part of my thesis, the Building Blocks experience generated several insights that led me to the implementation of the telephone-based system described in the next section.

The first insight was that, at least for the young people that I interacted with, knowing about community events seemed to be more important than knowing about places. Whereas most people seemed to know about the major sites and organizations of the City, it was much harder for them to find out the meetings and events that happened at those places. In the case of Building Blocks, for instance, we had to distribute flyers and go house in house to tell local residents about the games we were organizing at the nearby parks. It would be much better if there was already a system in place that made it easier for people to figure out what was happening at specific dates.

The second thing that Building Block made me realize was how difficult it really is to reach out to the traditionally unreachable. Even with the increase in cell phone adoption over the past couple of years, many young people, especially the youngest and most underserved, still did not have their own telephone and it seemed unlikely that situation would change in the near future. From what I noticed, besides direct, face-to-face interaction, regular telephones were still the best way to get in touch with that group.

Moreover, the lack of outreach also has to do with the way community initiatives are organized. All too often, they are structured in such a way that they end up getting in touch with the individuals who are the easiest to access and never reaching out to those

who probably needed them the most. In the case of the Youth Activity Researchers, for instance, since it was usually hard to find youth on the streets during the time of the Building Block morning sessions, the group ended up surveying mostly their own friends and young people from other youth organizations. In order to reach the most under-represented we would probably have to do the surveys later in the day or during the weekends, something that would go beyond the scope of the initiative.

Fortunately, as part of the afternoon Building Blocks activities I had the opportunity to interact with youth and families who lived in some of Lawrence's most impoverished areas. Several of the people I talked to were happy to participate in the games organized by Movement City youth and find out more about other youth programs and services that were available to them. Frequently, young people wanted to do something meaningful, but they had very limited access to information and ended up spending their time on the streets feeling bored. Even the parents who wanted to do something interesting with their children did not know about the opportunities available.

Finally, the Building Blocks experience also made me realize that engaging young people in the organization of personally meaningful community events such as block parties, street clean ups, games, etc. had the potential to be extremely empowering for youth and, in addition to that, help address some of the challenges that we faced as part of the Young Activists Network.

In particular, "engaging young people in the organization of personally meaningful community events" seemed to have the following attributes:

• It provided young people with opportunities to explore the place where they live, find out how decisions are made, and make connections with different kinds of people and organizations;

• It positioned young people as positive, active and creative community participants;

• It helped raise awareness to young people's opinions on their community;

• It was something fun and attractive for young people;

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- It did not conflict with other community activities that young people are engaged with. It rather added values to those activities by motivating young people to publicize them to other youth and the broader community;

- It was "contagious" in the sense that organization of promotion of events might inspire people to create, support, promote and attend more events and therefore contribute to a self-reinforcing cycle of youth participation.

I concluded that we needed to create some sort of city-wide network that made it easier for, on the one side, formal and informal youth groups to organize and promote community events and, on the other side, for even the young people from the most underserved areas to find out what was going on and be able to participate more actively in the city life. Eventually, such a network could also facilitate the implementation of youth surveys and serve as a way to voice the youth opinions about their city.

As discussed in the background chapter, telephones might provide a good entry point for the implementation of such a network. It was with those ideas in mind that I started implementing the What's Up system and planning the What's Up approach to youth participation and local civic engagement (Table 6).

Young Activists Network	What's Up
Engage youth with the city	Make the city more engaging to youth
Provide a place and program for youth to engage in community action with adults	Provide a mechanism for youth to engage with community action with one another and with adults
Help youth address personally meaningful community challenges	Help young people organize personally meaningful community events
Confrontational	Collaborative, fun
Centered on youth organization	Centered on youth and their community
Existing tools	Existing tools plus the What's Up system

Table 6 - Main differences between the YAN and What's Up approaches to youth participation

The following sections provide a detailed of the What's Up system and of its usage as part of the What's Up Lawrence initiative.

5.2 The design and operation of the What's Up system

In a simplified way, the What's Up system can be understood as a city-wide, telephone- and web-based news system specifically created to help young people communicate with one another and supportive adults, promote community events and find out what is going on in the places where they live.

In its basic form, the system is accessible via a toll-free telephone number and provides an individual voicemail box for each of its users to send and receive audio messages. In addition to that, the What's Up system offers more advanced features such as the ability for users to create and join voicemail groups, record community-wide announcements, add events to a shared calendar, and browse audio community news according to topics of interest.

By going to the What's Up website users can create and modify personal web pages, change profile configurations, add text and images to existing audio entries, check voicemail messages and other content published on the phone, and even upload audio files to be accessed by telephone users.

One can imagine, for instance, a 10 year old girl using the system to send a voice message inviting her best friends to celebrate her birthday, a young man using What's Up to check local sport events happening in the coming weekend, or the coordinator of a neighborhood youth organization calling the system to inform all its members of a new class being offered.

Young people may also combine the different features of What's Up in the organization of local events such as music festival, a parade or a street demonstration. Among other things, they could create a What's Up group for the event organizers, post meetings as calendar events that only that group could have access to, and use the group voicemail capabilities of the system to make sure everyone is up-to-date with potential changes in

the schedule. In a similar way, the organizers could also create groups for sponsors and participants of the event. Once the final date approaches, members of the organizing team could start posting periodic announcements for the broad community to see and even setup a special phone extension for people to ask questions and find out more about the planned activities. Depending on the interest, young people could use What's Up to record interviews during the event and then later use the tools from a local community technology center to edit and use those recordings to produce a documentary or presentation. Finally, they could use the What's Up website to upload audio files with special moments and comments about the event for their friends to download to their computers or listen directly from their phones.

Although cell phones are not required, their use may extend the outreach of the system to wherever the user happens to be.

Design considerations

In this section I describe some of the ideas that guided the design of the What's Up system and, to a large extent, the development of the What's Up Lawrence initiative itself:

- **The What's Up system should support local civic engagement**. This is the main motivator for What's Up. Rather than creating yet another system to keep youth in front of the computer, I wanted What's Up to serve as a catalyst for young people to become more aware of opportunities available to them, go out to the streets, meet different people, and engage with things that mattered to them.

  In particular, as discussed in the Building Blocks 2005 section, What's Up should support young people in the organization and promotion of personal meaningful community events. In order to do so, the system should provide telephone- and web-based tools to, among other things, facilitate communication to and among young people, help community residents find out about personally relevant youth-related events and opportunities, and help individuals collaborate with others who share the same interests.

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- **The What's Up system should be inclusive**. In order to truly open opportunities for youth to participate and be able to reach out to the diversity of people required to support them in their projects, it is important that the system could become accessible and usable to the greatest number of youth, adults and community organizations that exist in a determined region without discriminating against them by age, gender, location, socioeconomic or cultural background, frequency of technology access, or level of technical expertise. This is one of the main reasons why What's Up was implemented as a telephone-based system.

- **The What's Up system should be youth-led**. Rather than implementing a technology for adults to disseminate information to young people, we expected What's Up to be open, flexible, easy and attractive enough to promote direct youth expression. In order to regulate and promote system usage, we foresaw the system being managed by a local group – the What's Up Central team – composed by youth and representatives from youth-related organizations.

  The main goal of What's Up Central would be to work as 'network weavers' (Pentland and Barahona 2003; Traynor and Andors 2005) helping transform the potential of the system into reality. Among other things, the team should make sure that What's Up fits the local reality and is representative of young people's interests. Moreover, it should seed the system with meaningful content, facilitate connections among different groups, provide support to new users, and organize campaigns to promote local youth opportunities as well as the What's Up system itself.

- **The What's Up system should be "organic"**. The notion of organic technology used here is based on a similar concept from computer science (Lippman and Pentland 2004) and refers to technologies that not only add value, but also fit well into the existing socio-cultural dynamics of the people who use them. By making the What's Up features available by telephone, it is expected that people will be able to use the system whenever they want and wherever they are without necessarily having to master any new technical skill or invest in a specific device.

- **The What's Up system should be "viral"**. For the past couple of years, the concept of 'viral networks' has gained increased attention in the areas of marketing and technology (Wilson 2000; Lippman and Reed 2003).

  One interesting attribute of viral networks is that each new participant adds more capacity to the network. By relying on mechanisms that delegate autonomy and power to its members, viral networks do not suffer from the issues of more centralized structures where the larger the number of participants, the more the management tends to become overwhelmed, inefficient and hard to adapt.

  Moreover, since viral networks' members tend to benefit from the increased number of participants, there is an intrinsic motivation for existing members to attract new ones. As a result, the process of expansion keeps reinforcing itself until it saturates the environment.

  Along those lines, the What's Up system should be able to reach out to as many people as possible in a given community without overloading a central organization. In order to do that, What's Up users should have autonomy and ownership to adapt the system, recognize the contributions from the other participants, and feel motivated to attract new members to the system. As will be discussed, the viral capabilities of the What's Up system ended up being constrained by difficulties in the user registration process and conflicts with the design guideline below which focuses on safety issues.

- **The What's Up system should be safe**. At the same time that it is important for the users to feel ownership over the system and be able to adapt it according to their needs, it is also essential that the system provide a safe, trustful and respectful environment for young people to express themselves and try their community-related ideas. For that to happen, a focus group has been organized to identify concerns and suggestions from youth, parents and representatives of community organizations. Based on those meetings, several design decisions have been made such as: providing different functionality and access rights to registered and non-registered users;

requiring registration to be performed in-person with signed parental authorization; and making available author information for any entry published in the system.

Unfortunately, although requiring users to do registration in-person and getting parental consent added trust to the system, it also added an extra burden to the registration process and prevented many people from joining the What's Up network.

- **The What's Up system should be fun, appealing and engaging**. Above all, if the system is to be used, it has to be attractive to young people. In my opinion, young people would get excited about the voicemail capabilities of What's Up, the possibilities of recording their voice, interacting with young people and adults from other parts of the city, and promoting their own community initiatives. However, as will be discussed, the experience of the system demonstrated that several other things would have to be in place for What's Up to be engaging to youth.

- **The What's Up system should be easy to adapt and maintain.** Although the maintainability of What's Up was not something that would receive much priority during the present research, the modularity of underlying architecture of the system ended up facilitating the constant refining of What's Up based on the suggestions and feedback received from system usage.

As will be discussed, although the What's Up system had been designed with these guidelines above in mind, the actual usage and impact of the system depended in great part on the way new ideas and features were incorporated throughout the process and on the kind of support that was provided for users to know more about the system and make good use of it.

Structural description of the system

In terms of functionality, the What's Up system can be divided into a phone component and a web component (Figure 24).
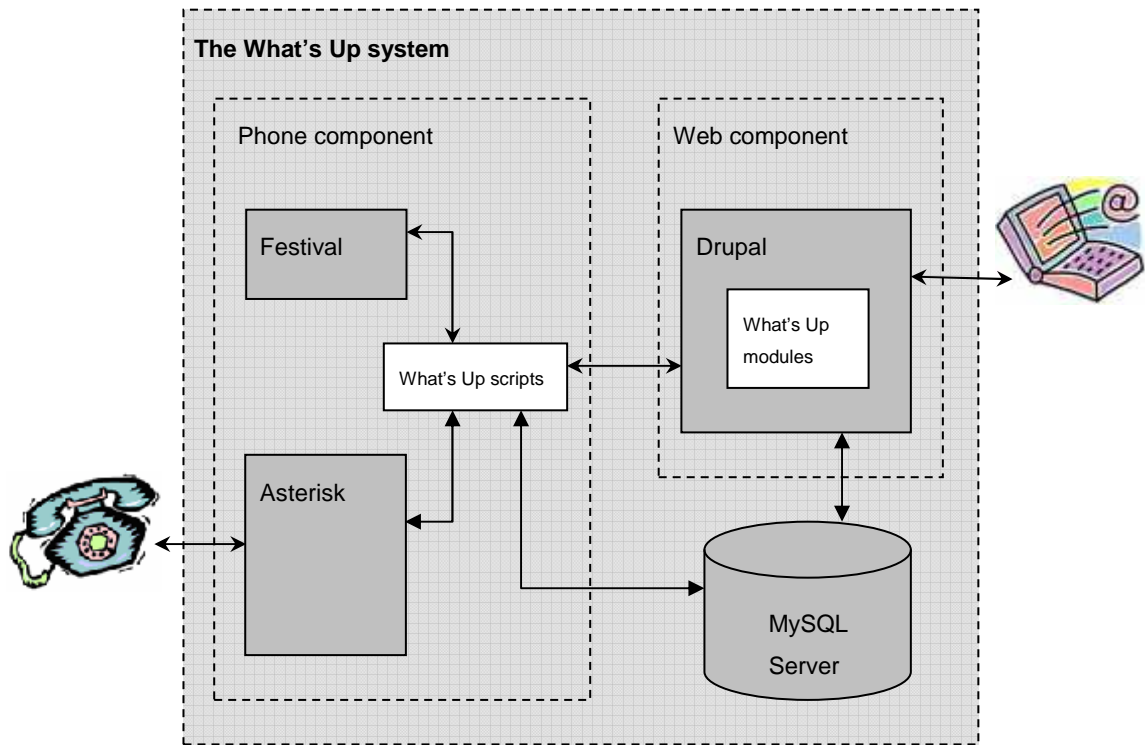
Figure 24 - Architecture of the What's Up system

The phone component handles telephone calls. It is responsible for generating and managing the audio menus presented to the user, handling phone input, generating audio messages in the selected voice and language, and controlling the interactions with the web component.

The web component, as the name implies, handles requests from web browsers. Moreover, it is responsible for managing most of the information pertaining to users and the data they store in the system such as voicemail messages, community announcements, events, personal pages, information about groups, etc..

When What's Up was originally conceived, most of the user interaction was expected to happen through the phone component of the system. The web component was meant to play a secondary role, making it easier for users to change configurations, download audio files into local computers, and perform other functions that would be too difficult to implement on the phone component of the system. As will be discussed later in this chapter, based on youth feedback, the web component ended up evolving to assume a much more central position in the What's Up system.

In terms of implementation, the What's Up phone component is made of:

- The Asterisk PBX[30], which is a free open source system that handles telephone calls and provides programmers with the basic tools to manage connections, receive input from the telephone keypad, play and record audio files, and more;

- The Festival Speech Synthesis System, which is a free open source tool that converts text into speech[31];

- and a series of scripts that I wrote to customize the above mentioned tools to the specific needs of What's Up and connect them with the web component of the system.

The web component of What's Up is composed by a Drupal-based website[32] and a series of Drupal modules developed specifically for What's Up.

Drupal is a free, open source software platform that facilitates the creation and management of web portals for community organizations. It comes with a series of modules that allow users to create, access and manage blogs, discussion forums, polls, calendars, audio entries, user groups and many other functional components that could be useful for this project.

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[30] http://www.asterisk.org/

[31] http://www.cstr.ed.ac.uk/projects/festival/

[32] http://www.drupal.org/

In the case of What's Up, I implemented a series of modules that extend existing Drupal functionality and provide a way for Drupal websites to be accessed by phone. Among other things, I created modules that allow callers to publish and query Drupal audio entries, create and manage groups, access and add events to a shared calendar. I also developed modules that provide Drupal users with personal homepages, phone extension numbers, voicemail boxes and more (Table 7).

Drupal module	Functionality provided
audio_xmlrpc.module	Exchange of audio files to and from the website
voip.module	Phone login, phone extensions, call history
voip_voicemail.module	Voicemail
voip_group.module	User groups, group extensions, group voicemail
voip_event.module	Calendar events
about_me.module	Personal web pages
simple_login.module	Online user creation and registration

Table 7 - Core Drupal modules developed for the What's Up system

In the end, the combination of scripts and modules developed for What's Up resulted in a flexible platform that can be easily extended to accommodate new functionality and makes it easier for software developers to create new systems that integrate telephone with the Web.

Operational description of the system

This section provides a brief description of the operations associated with the common functions provided by the phone component of the What's Up system. Since most of the operations of the website component of the system are similar to the ones of other websites, their description will only be provided in parts of the thesis that require such explanation.

In a typical call to What's Up, Asterisk answers the phone and executes a script that plays a welcome message, presents the main menu of the system, and waits for the caller to press any of the available options on the phone keypad (Table 8).

Phone key	Functional description
1	Go to extensions directory and to individual, group and event extensions
2	Go to community announcements and audioblog entries
3	Go to calendar of community events
4	Go to information about the What's Up system
*	Go to your personal area
#	Log in and log out

Table 8 - Main menu of the What's Up phone component

Contributing content. If the caller presses the option to go to her personal area, the script asks for her phone extension number and password and, based on the input received, retrieves information associated with that caller from the website component of the system. From that moment on, the caller is considered logged in and has all the access privileges that have been previously defined for her by the system administrator.

Once the log in is performed, the script informs the caller of the number of new messages awaiting in her voicemail box and presents a personal area menu where she may choose, among other things, to check her messages, modify personal settings, or create and manage content such as audioblog entries, groups, and community events. The last option of the menu allows the caller to go back to the main menu (Table 9).

Phone key	Functional description
1	Check personal voicemail messages
2	Record community announcements and audioblog entries
3	Listen to personal announcements and audioblog entries
4	Create and manage community events
5	Create and manage groups
6	Change personal settings
#	Go back to main menu

Table 9 - The personal area menu of the What's Up phone component

If the caller selects the option to create a new community announcement, the script asks her to record the announcement and, once that is done, offers an audio menu that allows the caller to either publish the new entry or define advanced options such as the categories to be associated with the announcement or whether or not the announcement is to be appear on the front page of the website.

The process of creating a calendar event is very similar to the above. The main difference is that, instead of recording the announcement, the caller is invited to use the telephone keypad to type in the date and time of the event and, after that is done, to record a title and brief description about the new entry.

In the case of group creation, in addition to recording a title and a description, the caller has to tell whether she wants the group to be open for everyone or to have the acceptance of new members be moderated. Once all the information is provided, the system creates the new group and generates a new extension number that can be used for future access to that group. This way, the caller can have extensions for, for instance, her friends, for her family, for her sports team, for her youth group, and others.

It is worth mentioning that whenever something is created from the phone, the system automatically associates a generic text with the new entry's title and description. Once a new entry is created, the caller can then go to the website and change the generic title and description to something more appropriate. For instance, "group 235" could be renamed to "Joanne's softball team", or "new event created by maryb" could be renamed to "Mary's birthday party."

It is also important to realize that behind each phone operation there is usually a series of interactions between the different components of the What's Up system. For instance, whenever a calendar event is created, the phone component script has to check with a special What's Up module if the user is allowed to publish calendar events, interact with another What's Up module to upload the audio title and description of the event to the website, and finally communicate with a third What's Up module to create the event with the given audio entries and date. In order to make sure the caller does not have to wait for all of that to happen before moving onto something else, the script delegates file

uploads and other time-consuming operations to special scripts that are processed in the background without competing for the caller's attention.

Accessing information.   The main menu of the What's Up phone component also provides callers with options to browse community announcements and check the shared calendar of events.

If the caller chooses to browse community announcements, she is then presented with the options to listen to the announcements posted on the front page of the website, listen to the latest announcements posted anywhere in the system, or listen to announcements by category.

Once the selection is made, the script retrieves the appropriate announcements from the website and plays them one after the other going from the latest announcements to the older ones. At the end of each entry, the caller is presented with the option to move to the next announcement, move back to the main menu, or check advanced information about the current announcement including author, date published, duration, and more.

If the caller is logged in, the system also offers her the option to play only the announcements that are new to her, to listen to the private announcements associated with the groups she is a member of, and also to delete the announcements that she has created.

If, back in the main menu, the caller decides to check the calendar of events, she is presented with a set of operations very similar to the ones offered for community announcements. The main difference is that she will be provided with options to browse upcoming events, browse events that start on a specific date, or browse events that belong to a specific category.

It is worth noticing that, to find out information about events and announcements associated with specific groups or individuals, the caller would have to go back to the respective group or individual extension and select the appropriate menu option.

Going to specific extensions. By selecting the first choice in the main What's Up menu, callers are presented with the options to either type in the number of an extension in the system or go to the extension directory.

If the caller chooses the extension directory, she is presented with the options to browse the extensions that belong to specific categories, to browse the extensions whose name start with a given letter, or to browse all the extensions available. In any case, the system retrieves the extensions that fit the specified criteria and plays the audio recording with their names one after the other. If desired, the user can select the extension being played and go straight to it.

It is worth mentioning that directory names associated with extensions are defined on the What's Up website. There the user can also specify whether or not she wants the particular extensions to be displayed in the extensions directory.

The current version of What's Up supports individual, group and event extensions. By going to an individual extension, callers can play the audio description recorded by the user associated with the extension, leave her a voicemail message, and browse the community announcements and event calendars recorded by that user.

By going to a group extension, callers can perform many functions that are similar to the ones available in individual extensions: play the audio description recorded for the group, browse group announcements and check calendar events associated with that group. One of the differences is that voicemail messages recorded in a group extension go to all the members of the group that have administrative privileges for that group.

Another difference is that, if subscribed to a group, logged in callers may also have access that group's member's area menu (Table 10). From that menu, callers can record announcements and calendar events that are only accessible by other members of the group. The member's area audio menu also provides callers with the option to broadcast voicemail messages to all members of the group. Those functions are particularly useful in case one needs to organize group meetings or send reminders that are not necessarily relevant to other members of What's Up who are not part of their groups.

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Phone key	Functional description
1	Check group voicemail messages (*)
2	Leave a voicemail message to other members of the group
3	Record group announcement or audioblog entry
4	Create and manage community events (*)
5	Change group configuration settings (*)
6	Membership management (*)
7	Delete group (*)
#	Go back to group extension menu

(*) Option only available if user is a group administrator

Table 10 - Group member's area menu of the What's Up phone component

If the caller is the creator of the group, she also has the option to check group messages, add or remove members from the group, and change group configurations. Group creators may also assign administrative privileges to other members of the group so that they too can behave as creators in relationship to other group members.

5.3 First attempt: the Building Blocks 2006 summer program

In the fall of 2005 I came up with the design guidelines discussed above, started implementing the What's Up system, and began to formalize a thesis research proposal that aimed at exploring the following hypotheses:

- Helping young people organize personally meaningful community events may overcome some of the barriers present in other more traditional approaches to youth civic engagement;

- A telephone-based technology like What's Up can bring great value to the above mentioned initiative.

The idea was to test the system and verify the new hypotheses as part of the Building Blocks 2006 summer program that Movement City was already starting to plan.

The plan. Whereas for Building Blocks 2005 I was directly involved with the organizing and running of the summer program activities, the plan for 2006 was that I would assume more of a technical consulting role in relationship to the initiative and, with that, be able to assess the system in a scenario that was closer to the reality of other community organizations that might eventually decide to use What's Up.

According to the proposal, Movement City was going to be responsible for the interactions with the youth, including introducing, promoting and integrating What's Up as part of the summer program activities, while I would be available on demand to fix bugs and modify the system to better fit those activities.

As part of my job, I was also going to analyze system usage and try to identify the ways in which What's Up contributed to individual, organizational and community empowerment. In order to achieve that goal, a comprehensive research plan was elaborated including pre- and post-tests with interviews, in-site observations, questionnaires, and automatic statistics collection from the system.

A central element of the research plan was a comprehensive 11-page, multiple-choice survey that would have to be answered by youth at the beginning and at the end of the study. In addition to the pre- and post-test surveys, an anonymous version of the same survey would have to be done before we officially started the summer program to serve as a baseline for the rest of the study. Although we knew that it would be hard to measure any impact with only 6 weeks of summer program, we were hopeful that the survey and the other research instruments would at least provide us with interesting insights and serve as a good foundation for other studies that we might implement in the future.

In January 2006 I started to have meetings with representatives from Movement City and Lawrence CommunityWorks to get their feedback on early implementations of the What's Up system, review the research plan, and decide what else needed to be done in preparation for the summer. Overall, the group was very supportive of What's Up. According to them, most of the members of the Lawrence CommunityWorks network did

not have email, and telephone would be a good way to foster more collaboration among different community groups.

Based on suggestions from one of those meetings, we decided to organize a focus group with youth, parents and youth organization representatives to introduce the major ideas behind What's Up and discuss potential issues of privacy, trust and relevancy associated with the system.

At the focus group meeting we discussed the main ideas behind What's Up and only showed the system at the end. The 15 participants of the focus group seemed very enthusiastic about the potential of What's Up. They also made several suggestions about how to make the system more safe and trustworthy:

- The system should not make personal information such as home address and phone number publicly available;

- Users should be able to control who can have access to what they post;

- The primary users of the system should be youth from 10 to 18 years old. The participation of adults should be limited to youth organization representatives and other individuals approved by a directing board like the What's Up Central described in the "design considerations" section above;

- In order to make sure participants do not lie about personal information, registration would have to be done face-to-face. People would have to go in person to specific youth organizations and bring an id and parental consent in order to be registered;

- Although everyone should have access to public information posted in the system, only registered users should be allowed to actually record announcements and add community events to What's Up;

- While teenagers should be allowed to receive voicemail from anyone, the voicemail boxes of the pre-teens should only be made accessible to people already registered with What's Up;

- The contents of the system should be periodically monitored and controlled.

The focus group helped us realize that the success of the initiative would depend both on the capability of What's Up to support the desired functionality, as well as on having a strong and committed local leadership team to promote the system and make sure it would be used in an appropriate way.

On May 10th, I attended another planning meeting. At that meeting, I learned that Building Blocks 2006 summer program would run between July 10th and August 20th. During those 6 weeks, twelve young people would be engaged in community-oriented activities similar to Building Blocks 2005.

This time, however, the whole group would work together as a single team and would focus primarily on the organization of a youth forum for the end of the summer. The youth forum would concentrate on some of the issues identified during Building Blocks 2005 and would provide a good opportunity for young people to interact directly with the mayor and other community representatives. Finally, the Building Blocks participants would also engage in the development of a community mural and other service-oriented projects with a local youth organization that Movement City was partnering with.

Although the plan was different from what I originally imagined and would not allow the interaction I expected with the most underserved youth of the city, it would still provide opportunity to test What's Up as part of community projects and, in particular, to use the system as tool to promote and facilitate the organization of the Mayoral Youth Forum.

When I met with the organizing team again three weeks later, the plans for Building Blocks 2006 had already changed considerably. Movement City decided to partner with yet another organization and, as part of the deal, would send the young people we would be working with to a summer camp outside the city during weeks 4 and 5 of the Building Blocks program.

The summer camp would help the Building Blocks participants to develop as a team and it would also provide them with a rare opportunity to go outside the city without their

families. However, it would also reduce the time young people would be working with What's Up from six weeks to four weeks with two weeks in the middle.

With that change, I started to get concerned about the lack of feedback that I would be able to get for my thesis. I also started to get afraid that the multiplicity of goals and partnerships involved with Building Blocks would make it hard to integrate What's Up in a meaningful way with the other activities.

In spite of those concerns, I did not think there was much I could do. By positioning myself as a technical consultant to Building Blocks, I was there mainly to offer support and observe; not to do major interventions. Still, I made it clear that the future of the What's Up Lawrence initiative would depend on getting good feedback from young people using the system and that the summer camp would constrain the exposure that youth would have with What's Up. However, I was not in position to actually tell Movement City to cancel the summer program so that we could spend more time testing the system.

According to the new plan, Building Blocks participants would spend about 4 hours per week organizing and promoting the youth forum, and 6 hours per week working on the other community projects. The activities would be led primarily by one Movement City staff and one volunteer. Other Movement City staff would be available on demand and I would be helping with anything people needed concerning What's Up. In particular, every Thursday morning I was expected to help organize special 2-hour What's Up sessions for the Building Blocks youth to get introduced to the system, learn about the registration process, and give me suggestions about how to improve What's Up.

The reality. When Building Blocks 2006 officially started in July, things seemed to be in a good shape. On the research side, a Movement City staff person had worked with a group of Movement City members and managed to get 141 anonymous surveys filled out to be used as the baseline for the remaining of the study (Table 11).

Table 11 – Major results from the Building Blocks 2006 anonymous survey

- In June 2006, representatives from Movement City surveyed a total of 141 people. Of those, 53% were male, 19% were between 9 and 12 years old, 63% were between 13 and 17 years old, and the remaining 18% were all older than 18.

- 96% of the surveys were answered in local youth organizations and high schools.

- 68.4% of the respondents indicated English as their first language and 31% indicated Spanish. 91% of the respondents are bilingual.

- 68% of the respondents were born in the United States, 27% in the Dominican Republic.

- 75% of the surveyed were proud to tell others that they were from Lawrence.

- 67% of the surveyed did not think that in Lawrence young people's ideas were welcome and considered by the city government.

- 83% of the surveyed thought that Lawrence offers good services for children and youth

- 78% did not think Lawrence is a safe and peaceful city for children and youth.

- Only 34% affirmed that when they become adults they intend to stay in Lawrence

- 89% informed that they would like to make Lawrence a better place for children and youth

- 62% believed that, by working together with adults, they can influence decisions that affect the city.

- 57% informed that they had never visited City Hall of a government office to understand how it works. 37% replied that they had only done so a long time ago.

- Over 75% replied that they have only been outside the city or gone to a park, cultural event or a movie a long time ago.

- 91% replied they are not part of local political groups, 68% that they are not part of any local community improvement group, 66% that they are not part of any school clubs/student governments. In contrast, only 42% were not part of sports teams and over 54% were members of music, art, drama or dance groups.

- 45% informed that they never find out about community planning or city improvement meetings, and 41% replied that they never find out about services available to youth

- Over 70% find out about festivals and local events by word-of-mouth.

- 73% informed that they can usually be reached by home telephone, 63% by email, 62% by cell phone, and 47% by instant messenger.

- 41% have a personal website.

- 82% have access to computers at home, 70% at school, and 48% in the library.

- 87% would like to be part of a youth initiative to change Lawrence into a better place for children and youth.

- 82% would like to receive information about youth-related activities and events that are happening in Lawrence.

- 82% would like to inform others about youth-related activities and events that are happening in Lawrence.

- 67% would like to receive information about sports, 55% about arts and entertainment, 37% about employment opportunities, 35% about youth groups, and 34% about education. Only 13% demonstrated interest in government information.

I had also completed interviews with the Movement City director and the staff members who would be part of Building Blocks. Overall, the respondents believed that helping youth organize community events would "empower young people to seek their own opportunities," "feel accomplished" and "be heard". They also expected the What's Up system to help "kill the boredom of the city," reduce the "negative aspects associated with the streets" and "help connect those who do not have access to computers".

On the technical side, the current version of the What's Up system allowed callers to send and receive voicemail messages, create and manage groups, and publish and access community events. At that time, the web component of the system was very rudimentary and was mainly seen as a way for people to configure their account settings and eventually have access to their audio recordings for download. Most of the interaction was expected to happen on the phone.

In order to facilitate the user registration process, I prepared 100 packets containing a brief introduction to the What's Up Lawrence initiative, a registration form, a parental consent form, a personal agreement form, and the pre-test questionnaire of the survey.

In addition to that, I created accounts for each Building Blocks participant and also created 100 temporary What's Up accounts with predefined usernames and passwords to be given to newly registered users. As previously agreed with Movement City, each Building Blocks participant would be responsible for registering 7 people into the system. Once a young person filled all the forms and the parental consent, she would receive a registration certificate with her account information and, with that, would be able to start using the system right away.

As seen from my research perspective, the first week of the program would be devoted to getting Building Blocks participants introduced to What's Up; the second and third weeks would focus on registering new people; and the last week would concentrate on using What's Up to promote the Mayoral Youth Forum to the subscribers of the system.

On Thursday, July 13th 2006 I had my first session with the Building Blocks youth. At the session, we talked about What's Up, played with the different features of the system

and started discussing how to integrate it as part of Building Blocks. Although it was hard to demonstrate What's Up without a good speaker phone that everyone could listen to, the youth had a lot of fun recording their names and sending voicemail messages to each other.

On Tuesday, July 18th I was notified that, due to some incompatibility in goals or approach, the Building Blocks youth would stop working with Movement City's partner organization in the community service projects. Instead, they would use the extra time to organize and promote the Mayoral Youth Forum. In addition to that, the weekly What's Up sessions would also expand from two to four hours long.

Counting with the extra time, the second What's Up session at Building Blocks was organized in two parts. On the first part, the group role-played how to do the surveys and perform the What's Up registration. It was very interesting to see how they described What's Up as "a system like MySpace, but on the phone," referring to What's Up's potential to help youth meet new people or find out about new things, but also more "safe and local."

The group also brainstormed about what could be done to improve the What's Up system. Among other things, they said that:

- What's Up should have a more human-like voice. The computer-generated voice that the system used to present audio menus was too impersonal and robot-like. Ideally, the system should have a female voice and speak with a "urban accent" like the youth themselves;

- What's Up should have a "very cool" website. The youth would like a website where they could create personal profiles, check out the audio recordings from each other and get a sense of what was happening in the city. Moreover, they would like a website that looked nice; a website they would be proud to show to their friends;

- The waiting music and the "beep" sound that the system played in between options should be replaced by something better that they could help choose;

- The interaction with What's Up should be faster and more direct. According to the young people, the system sometimes required too many keystrokes to get where they wanted to go. Among other things, there should be more shortcuts from the personal area to other parts of the system, and perhaps What's Up could identify who was calling and go straight to the person's extension skipping the login procedure;

- What's Up should have a support extension for callers to ask for help and find answers to common questions.

In my opinion, the discussion went really well. I told the group that their feedback was extremely important to the success of What's Up and that I would start working on their suggestions on that very same day.

On the second part of the session, the group went to a local youth organization to try to recruit people to join the system. Unfortunately, it was too hard to get people to register without previous notice and without enough time to fill all the forms, or telephones to demonstrate how things worked. Above all, however, the visit made us realize that collecting the signature of the parental consent would require prospective members to take the consents home and return them at some other day. Unless young people were extremely enthusiastic about What's Up, getting the parental consent back would be unlikely to happen.

While discussing the registration challenges with Movement City staff after the session was over, somebody asked why not abolish the parental consent and the pre-test survey from the registration process. The group talked about that idea and got to the conclusion that, although the survey was long, it only took a couple of minutes to be answered and would provide good information for later use.

The main problem was getting parental consents signed and returned. According to Movement City's executive director, "the parental consent challenge is representative of a broader disconnect parent-child. But it's important to get it... for the ethical considerations of the network we are trying to build". He also said that, to get the consents, we would have to foster demand for What's Up, i.e. to transform the system

into "something that is meaningful, useful and attractive to the kids". Moreover, Building Blocks members would have to knock at people's houses, talk to friends and activate their personal connections to get new users in the system.

At the third What's Up session, most of the Building Blocks participants managed to bring the registration forms for their friends and relatives. Although few of the participants did not have problems recruiting people for What's Up, for most the registration process required too much work.

In order to take care of the paperwork, it was decided that I would stay with three Building Blocks youth verifying the forms and adding subscriber's information onto the system. The rest of the team would go out to promote the Youth Forum and try to get more registrations for What's Up. Things would be much better if, like in the study performed by Penuel, Gray et al. (2004), we had palmtops and better tools to make it easier for youth to input the surveys and registration information directly into the computer.

In addition to handling the bureaucratic stuff, my group also started recording a new voice for What's Up. Based on young people's input, I used the week since the previous What's Up session to implement the first version of the "Voice Manager System," a sub-component of the What's Up phone system that allowed people to create new system voices and replace the existing computer-generated audio prompts and menus with the ones that they recorded.

Since the Building Blocks members were going to be away on the summer camp for the following two weeks of the program, my plan was to use that time to implement the suggested changes in the system and improve parts of it that were not working so well. Among other things, I started working with a graphic designer in a new implementation of the What's Up website. I also began to implement a mechanism that sent email notifications for each voicemail a person received. This way, users would be constantly reminded to go to What's Up to check their messages.

To my surprise, the Monday after the camp started I received an email from one of the youth from my group asking if I could go to Lawrence so that they could keep working on the voice recording and on the paperwork associated with What's Up.

On Tuesday, I organized a meeting with Movement City to figure out what happened. Apparently, the summer camp was very different from the expected and, since young people were not having a good experience there, Movement City decided to bring them back to Lawrence much earlier than planned. In fact, the young people had already been back for several days before I was notified.

At the meeting, I also learned that the Mayoral Youth Forum had been postponed to a still-to-be-defined date in the fall. As it seems, the Mayor would not be able to attend the event at the original date and, rather than meeting with a representative, the young people preferred to move the event to a time when he would be present.

Reflecting about all the things that had happened thus far, I realized that none of the main community events and activities that we had originally planned for the Building Blocks summer program would be implemented. This way, it would be really hard to see if What's Up would be helpful in the organization of community-wide initiatives, which was the original goal of my thesis.

It was interesting for me to realize that, while for the Young Activists Network the approach had to be modified in order to fit young people's interests and schedule, most of the issues faced by What's Up Lawrence thus far were not directly related to young people. The majority of the challenges had to do with the way the youth organization interacted with its partners or how the government treated young people.

Fortunately, Movement City's executive director concluded the meeting by saying that the Movement City itself would like to officially adopt What's Up as part of the organization. In his view, each department of Movement City should have its own extension number and every member of the organization should be registered in the system. This way, he believed it would be much easier for members and staff to

communicate with one another and find out what was going on even if changes happened in the last minute.

Since Movement City's registration day was going to overlap with the last day of Building Blocks, it was decided that the remaining time of Building Blocks should be devoted to promoting Movement City and getting everything ready for the registration.

Based on those decisions, I kept working with my group in the recording of the What's Up audio prompts, typing information from the registered users, preparing new registration packets, and practicing the registration process. Unfortunately, What's Up had about 800 prompts to be recorded and the young person doing the recording got tired after a couple of days. As a result, the final voice used in the system turned out being a combination of two youth voices, plus the computer-generated one for the non-recorded prompts.

In addition to the above, the group added the registration day and a few other Movement City events to the What's Up calendar. Finally, a Movement City staff broadcasted a voicemail message reminding all the current 106 users of the system to come to the registration. Since the What's Up system provides users with the option to receive email notifications for each voicemail message received, many of the current users who did not have the habit of visiting What's Up ended up receiving the email reminder. The combination voicemail-email proved to be very effective in delivering the message to users with different degrees of connectivity and technological background. Prior to What's Up, the only way Movement City promoted their events was through printed flyers or word of mouth. What's Up complemented those methods in a very efficient way.

Sadly, the evening before registration day I was informed that it would not be possible to include the What's Up registration as part of the event. As it turned out, Movement City would start registering their members using a new computer system that had recently been adopted by Lawrence CommunityWorks and were afraid that having two parallel registration procedures happening at the same time would be too confusing and would be detrimental to the overall experience of the new prospective members. According to

Movement City's management, it would be better to promote What's Up during the semester and count with the support from the different Movement City departments to do so as part of their work.

Challenges and lessons learned

When I first envisioned the Building Blocks 2006 design experiment, I expected to be able to work with youth in the most underserved parts of Lawrence and see whether or not the What's Up system would be something they could use to communicate with one another and become more aware of what was happening in the city, including the Youth Forum and the other activities organized as part of Building Blocks.

In the end, due to the series of organizational issues described in the previous section, it was not possible to work with the intended audience or to organize the events originally planned. Nevertheless, although the end result turned out much different from the expected, the Building Blocks 2006 design experiment highlighted important cultural, technical, organizational and methodological lessons that have to be considered in future implementations of the What's Up approach to youth empowerment.

Cultural lessons. On the cultural side, the Building Blocks 2006 design experiment made it clear that the concept of a telephone-based community system is very abstract for youth and it is not something that young people necessarily have a model of in their mind. That makes it very difficult for them to visualize What's Up or imagine what can be done with it before actually trying the system. Some of the youth had already experienced business phone systems before, but What's Up was different. The value of the system would have to be developed with examples, special promotions, adequate support, and connections with things that young people were already familiar with.

That is one of the reasons why I believe young people were so eager to have a website associated with the system. The website would give What's Up a face and turned it into something more tangible and concrete for all. Indeed, during Building Blocks 2006 the What's Up website evolved from a standard look (Figure 25) to something closer to what young people imagined their news system should look like (Figure 26).

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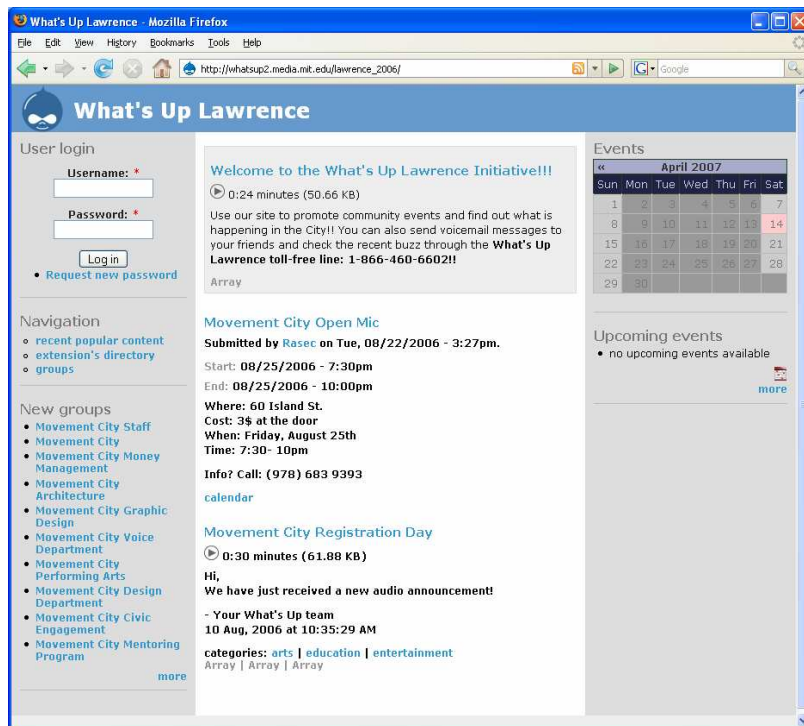
Figure 25 - The What's Up Lawrence website before Building Blocks 2006
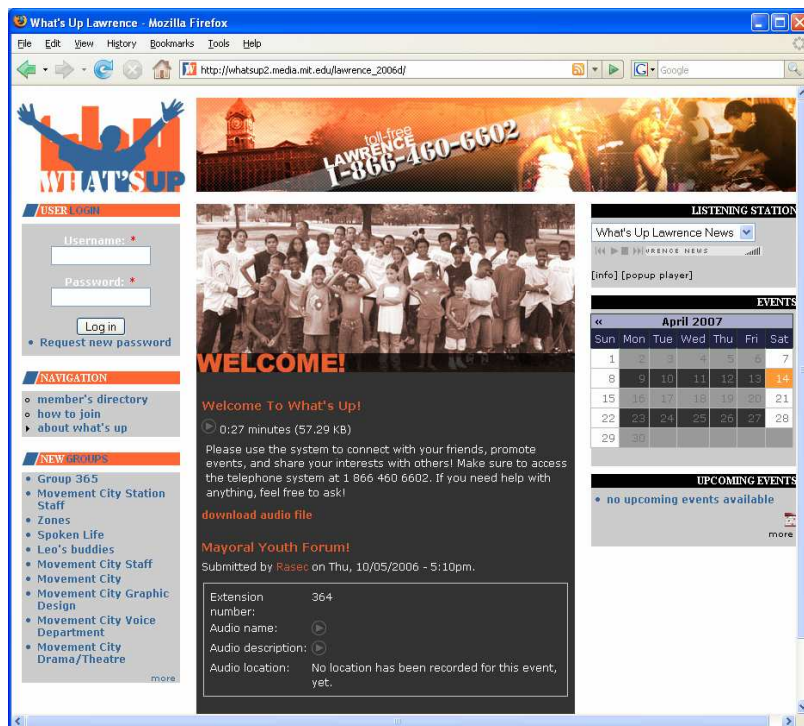
Figure 26 - The What's Up Lawrence website after Building Blocks 2006

In order to foster youth ownership, I constantly reviewed the website designs with the Building Blocks participants and tried to incorporate elements that related to them as much as possible. For instance, the top banner of the website included pictures of Lawrence and of events organized by young Laurencians. Moreover, the very logo used for the What's Up Lawrence initiative was derived from a picture taken from a young person who was part of the program (Figure 27). The whole Building Blocks group appreciated seeing their ideas being incorporated into the system design.

Figure 27 - The What's Up Lawrence logo

The addition of the website also increased the number of entry points to the functionality and information provided and made What's Up more accessible.

It is interesting to notice that, while a telephone-only system could be seen as something that was only meant for people who did not have computers, the combination telephone-website transformed What's Up into a shared space in which people with different degrees of Internet access and technical expertise could interact with one another. At the same time that What's Up provided an opportunity for the traditionally disconnected to have a more active presence in the web-world, the system also opened the potential for web users to reach out to others outside their universe.

Technical lessons. Although the integration of telephone and web found in What's Up was innovative and produced an interesting way of bringing together people with different levels of connectivity, from a technical perspective it was non-trivial and posed a series of challenges. For instance, while on the web component of the system the audio entries recorded from phone had to be integrated with textual content already being presented, on the phone component of the system the information coming from the website would have to be navigated as audio entries.

As a basic solution to this problem, What's Up was implemented in such a way that most of the system entries had both a textual and an audio representation associated with them. Although it is in some cases possible to use special computer applications to convert speech to text and vice-versa, existing tools are still far from perfect and were avoided in the What's Up version used in this thesis. In order to simplify things, most audio entries had to be recorded by phone and, once created, the system associated them with a generic text such as "new community event created by user323" that could be later modified to something more meaningful like "Anne's birthday party" by going to the website.

Although it only took a couple of seconds to create community announcements, groups and calendar events from the phone, many users felt it would be much better if they could do the audio recordings directly from the website and, with that, skip the extra steps inherent to recording audio entries in one place and editing the text associated with them in another place. Moreover, by going to the website users would be able to actually visualize all the elements involved in the creation of the entries, something that would contribute to make the whole process more concrete to them.

Unfortunately, recording audio directly from the web browser would require the development of a specific web-based audio recorder that went beyond the scope of the current work. As I see from today, the implementation of such recorder would have had a tremendous impact on the way the system was used and brought a great contribution to making the web more inclusive.

Another challenge involved the creation of a phone interface that was at the same time engaging and easy to navigate. As described earlier, since young people did not like the

computer-generated voice of the audio menus, I ended up creating a mechanism for youth to add their own voice to the What's Up prompts. I also asked young people to provide me with audio files to be used for the background music and the "beep" that the system produced while switching from one section to another.

As will be further discussed, although recording audio prompts or creating background music files were within the participant's capabilities, those tasks all required an amount of time and support that was hard to obtain during Building Blocks and even harder to guarantee once the summer program was over.

As for the What's Up phone menu navigation, unlike audioblog services that use the telephone as a mere input device that records audio entries to be uploaded to a website, or more traditional business systems that people usually access to solve a question and hang up, What's Up had to provide ways for the caller to browse news, listen to messages, record events, and move back and forth between different parts of the system.

While good web pages include graphical clues and contextual information that help the user situate herself and have a sense of the possibilities at a glance, phone interactions tend to be sequential and less tangible. People have to listen to one option after another and not as much information can be presented at once. For instance, although it is relatively easy to display a monthly calendar as a colorful table on a webpage, the same calendar would have to be played one day after the other on the phone.

In the end, the phone interface of the What's Up system turned out being much less organic and easy to use than it looked like. People assumed that the phone interaction was something easy that they did not have to worry about. However, using the 12 buttons of a telephone keypad to navigate community information required a level of preparation that was not expected by What's Up callers.

Based on those constraints, rather than trying to replicate everything that was available on the website, the success of the What's Up phone component depended on providing users with a core subset of the functionality available on the system without overwhelming them with layers of menus and options of secondary importance. During

the Building Blocks 2006 experiment we started to get a glimpse of this trade-off between functionality and navigation, but still more testing would need to be done.

Organizational lessons. On the organizational side, the Building Blocks 2006 summer program gave me a better understanding about how the different design principles defined for the What's Up system relate to one another. For instance, although, as seen from now, a web version of What's Up would be more concrete and organic than the telephone system that ended up being implemented, one of the main priorities of the project was to create something inclusive enough that even young people who did not have access to computers would be able to use. In a similar way, although What's Up was meant to be viral and let young people promote the system and do the registration by themselves, the need for safety-related requirements such as signed parental consents led to a more centralized and harder to disseminate registration process.

Building Blocks 2006 also helped me appreciate the challenges of trying to implement a project from the outside rather than from side-by-side with or within a community organization.

By positioning myself as a consultant that focused primarily on the technical aspects of the project, it became very difficult for me to understand how certain decisions were made and why things evolved in certain ways. While at previous design experiments such as the ones of YAN or Building Blocks 2005 I had participated more actively in the youth activities and had some control about how things happened, at Building Blocks 2006 I felt as if I did not have the right to critique or intervene as much.

If I were a real consultant and had been hired by Movement City to maintain and improve the system based on that organization's demand, I believe I would not bother so much about the way things were evolving. However, since I expected What's Up to occupy a central role in my thesis and was feeling pressured about time, the lack of control over the process ended up generating a lot of stress and frustration on my side.

Yet, while on the one hand there were times when I wished What's Up had received more attention during Building Blocks, on the other hand I realized how hard it would be for

Movement City to commit more without the certainty that the system would continue to be supported after I graduated and that the organization would be able to benefit from the investment made.

From this perspective, it would be better if the development of the What's Up Lawrence initiative had been associated with a funding grant or something similar that Movement City and MIT had collaboratively written together and that put the two organizations in a more balanced and clearly defined relationship.

Methodological lessons. On the methodological side, I was really surprised about how much a direct survey can reveal about young people's impression about their city. Although environmental indicators such as number of schools, or percentage of green space can help one get a sense of how friendly a given region may be for a young person, I believe direct surveys like the ones carried as part of What's Up Lawrence are more personal and representative of what youth really think about where they live. It would be great if there were some sort of child-oriented census that surveyed young people periodically to find out how they perceived their cities and how that perception evolved over time.

Despite the importance of youth-oriented surveys, the Building Blocks 2006 experiment also taught me to be careful about how to integrate formal research in a participatory study using a technology still under development.

As I see it now, it did not make sense to try to collect extensive impact data at such an early stage in the What's Up system development. Although we had some early feedback on system usage, it would be better to have spent more time testing the usability of the system with different youth groups before attempting a more formal assessment.

Indeed, I still believe in the idea of collaboratively developing the What's Up with young people. However, now I think that the process had to be more gradual. If I were to start again, I would like to spend more time with small focus groups, allowing more time to refine the tool and find appropriate opportunities to incorporate it into the youth program.

Focus groups could help set the expectations and the tone of the collaboration without forcing unnecessary commitment.

Still, even if What's Up were fully developed, the research instruments would have to better integrated with the other Building Blocks activities in order to not interfere with the actual design experiment being carried. As discussed in the previous section, the pre-test questionnaire was clearly perceived as an obstacle for user registration. Although we tried to explain that the survey would be useful for all and that answering the questions was the "only payment" expected for the What's Up services, in the rush of the activities that message has never been conveyed all the way to the prospective users.

From my current perspective, in order to properly collect the pre-test information, we would need to prepare better support materials and training for the youth who were recruiting new members for What's Up.

Above all, however, in the spirit of participatory research, it would be important to make the results of the youth surveys directly available to the youth in ways that they could understand. That would help young people see the actual value of the research and make it relevant to them. A feature like that would definitely contribute to make What's Up more representative of the collective youth opinion and a catalyst for young people's empowerment.

5.4 Second attempt: The What's Up adoption at Movement City

Between September and December 2006 I kept collaborating with Movement City in the What's Up Lawrence initiative. This time, my main goal was to address the main usability and administrative challenges identified in the previous design experiment and help Movement City's newly-appointed Youth Network Organizer use What's Up as part of his job.

The "Youth Network Organizer," or "Youth Organizer" is a staff position that emerged during Building Blocks and that, in my opinion, could play a central role in increasing youth participation and empowerment within and beyond Movement City.

Among other things, Movement City expected the Youth Network Organizer to interact with formal and informal youth groups of Lawrence and facilitate communication among them; organize a Mayoral Youth Forum to discuss topics of interest to young people; and support youth groups in the organization of events and retreats.

When Movement City created the position, they assumed that What's Up would be the main tool used by the Youth Network Organizer in his work, and that the Youth Network Organizer would be in charge of the different responsibilities associated with What's Up. Those would include, among other things, supporting the What's Up adoption by the different Movement City departments, promoting What's Up to youth and organizations across the city, and also recruiting a group of youth to form the What's Up Central team that would be responsible for managing the system.

The plan. On August 24th, 2006 the Youth Network Organizer and I met to talk about his plan for the fall and discuss what needed to be done. Roughly speaking, I would keep working on the What's Up system's look and feel, and he would be the person that was going to interact with users and report to me what needed to be improved in order for the system to serve youth and organizations in an engaging and organic way. In some cases, his job would as simple as reporting bugs and suggestions for me to implement. In others, it would involve promoting the system, getting youth to record audio prompts for What's Up, or providing orientation to Movement City staff.

According to the plan, the Youth Network Organizer was going to spend the first couple of weeks of the program registering Movement City members into the system and helping Movement City staff create groups and use What's Up as part of their activities. The remaining weeks would be devoted to interactions with other Lawrence youth groups, the organization of the Mayoral Youth Forum, and helping Movement City staff use the system in creative ways.

In order to simplify things, Movement City decided to focus What's Up on the youth 14 to 19 years old and, once they were using the system, start working with the younger members.

As another measure to reduce possible problems, we also decided to remove the large pre-test survey form from the actual What's Up registration process and try to do it once things were better controlled. Unfortunately, as will be discussed, the What's Up adoption by Movement City ended up encountering many obstacles and the survey ended up not being fully implemented.

The reality. Movement City is an organization that has 4 fulltime staff and about 20 temporary ones who are hired on a term-by-term basis to lead specific classes and initiatives. The week before the fall program started, the whole group met everyday for two hours to discuss the organization vision, build team spirit, and plan for the term. In one of those days, they attended a 30-minute introduction about What's Up and received a little registration certificate with their account settings and a 1-page quick reference guide about the system.

According to the plan, during the upcoming week they were expected to call the system, go to their personal extension and record their name, welcome message and personal description. Once that was done, they were supposed to distribute registration packs to their students and collect them back a few days later. The Youth Network Organizer was going to be available to answer questions and to support everyone in anything they needed. He and I would keep in touch by phone or email on a daily basis, and would meet in person at least once a week.

On Tuesday, September 12th 2006 the fall term started. Despite the initial enthusiasm, after three weeks into the program many of the Movement City staff had yet to do their recording and most of the Movement City youth had not been registered. Some said that the system was hard to use, and they did not know where to go. Others had trouble remembering their account password. Still, most of them have not even tried to call the system.

The Youth Network Organizer and I were interacting by phone or email mostly everyday, and meeting in person at least once a week to discuss the state of affairs and decide the next steps. Among other things, we decided that, on his end, the Youth Network Organizer would place signs about What's Up around Movement City, would create a

poster with the What's Up extensions for the different Movement City departments, and would talk to people directly. In addition to that, he was going to devote time to help novice users master the system and, finally, would seed What's Up with events and announcements from Movement City. Hopefully, those actions would bring people closer to What's Up and give them a better understanding of what the system was all about.

On my side, I would work to simplify What's Up and make the system more organic. Based on user feedback, I added more ways for people to go from their personal extension to their group extensions and other parts of the system, improved the events and announcements navigation, and reduced the number of steps to create content. For instance, rather than asking users to input the start, the end and the location of new community events, the system was changed to only ask the user for the event start.

In order to make the system more organic, we decided that "rather than bringing the people to What's Up, What's Up should go to the people". Following this motto, I implemented a mechanism that allowed young people to embed and play What's Up audio entries directly into their MySpace pages. Since most of the youth that I interacted with already had personal pages on MySpace, it would not make sense to expect them to also create a personal page on What's Up.

In addition to individual entries, the new feature also allowed young people to embed a play list with the latest community announcements recorded in the system. This way, similar to an Internet-based radio, every time they reloaded their MySpace page, they would listen to the public songs, poems or news that users had contributed to What's Up.

Besides the MySpace feature, I also implemented an option that allowed users to receive the audio of their voicemail messages as email attachments. Before this option, the voicemail notification email contained just a link to where the voicemail was stored on the What's Up website. Although in theory clicking on the link was not a large effort, in practice being able to play the message directly from the email turned out to be a great improvement.

In the following weeks, several voicemail messages were broadcasted and a couple of events were added to the community calendar. In spite of that, the website still seemed very empty and the system logs only showed a handful of people calling in to What's Up.

During our weekly meeting October 12th, 2006, five weeks into the program, the Youth Network Organizer kept reassuring me that everything was alright, that the new What's Up features were great, and that What's Up was starting to gain momentum at Movement City.

Although I really wanted to get things evolving at a faster pace, I realized that my perspective from the outside was perhaps distorted and that, rather than trying to enforce my agenda, I should keep trusting the process and see where things would go. My goal was to help Movement City assume ownership over What's Up, and that seemed to be the best way of doing that.

At the meeting, the Youth Network Organizer passed me several suggestions about how to improve the What's Up's usability, including changes in the system terminology and the addition of web pages providing better information about What's Up and how to join the system.

In particular, the Youth Network Organizer emphasized that members would love to have individual What's Up homepages that they could personalize. According to him, young people wanted more ownership over What's Up and, for that to happen, they needed ways to establish a space of their own within the system and also be able to add comments and customize their experience in different ways. As he pointed out, "the more the system did not resemble a database, the better". That made me think that, in addition to building something participatory that reflected the opinion of the group, it was really important to provide ways for young people to express their personal identity and be recognized as unique individuals within that group. It is interesting to notice that, although users could personalize their individual What's Up phone extensions with a welcome message and a description about themselves, web pages had a very different appeal and were much more attractive to the young people that participated in the What's Up design experiment.

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On the evening of Thursday, October 19th, Movement City and the Lawrence YMCA organized the first Mayoral Youth Forum of the City of Lawrence. The event had been previously promoted with flyers at the both organizations and also through the use of the voicemail broadcast, calendar and community announcement features of What's Up (Figure 28).

Figure 28 - What's Up announcement for the Mayoral Youth Forum

In total, there were about 75 young people between 14 and 19 years old. The youth were organized in four discussion groups. Those groups were moderated by youth facilitators and each group had a specific question to focus on:

- What spaces are available for youth besides youth programs? What spaces are needed?

- What concerns do people have concerning nightlife in the city?

- With proper supports, what can youth and police do to improve relations?

- What obstacles exist concerning youth opportunities in the city?

Once the discussion was over, the facilitators presented the main points identified by their group to a panel composed by the mayor, a representative of the local police department, a parent, and two youth. Among other things, the forum raised attention to the lack of places in Lawrence for young people to hang out and the lack of respect that the police interacted with youth.

The mayor told everyone that the city legislation allowed for the creation of a youth council, and that activating that council would probably be the best way to get young people's voice officially recognized by the city administration. He also said that young people were not aware of the opportunities that already existed for them in the city, and that his administration was creating a website to address that problem.

At the end of the event, the Movement City member who was working as the master of ceremony said it would be great to have a service like What's Up Lawrence for young people to post information and find out what was happening in the city. I also had opportunity to talk briefly with the mayor and show him a snapshot of the What's Up homepage. He said he liked the site and would ask someone from his staff to contact me.

To this date, I have not heard from anyone at city hall about What's Up or found the youth-oriented website created by the government.

Like all the other ideas proposed at the forum, the adoption of What's Up at a city scale would probably require additional campaigns and follow-up. Perhaps future versions of the What's Up system could help in the documentation of the events like the forum and on the subsequent steps required to make sure young people's ideas are in fact followed-up and implemented. Unfortunately, listening to young people and giving sequence to their ideas is a common problem found in many communities worldwide (Bartlett 2005).

The week after the Mayoral Youth Forum I attended an event organized by the University of Massachusetts at Lowell that aimed at celebrating the youth organizations of Lawrence and start a discussion about how to strengthen the youth services of that city.

At the event, the participants talked about issues such as education, personal development, recreation, safety and others. Apparently, there was an overall need to spread information, help people become more aware of what was available, and facilitate partnerships among organizations. Some even suggested the creation of a "centralized clearinghouse of information about youth programs" to provide information about programs and their components, help connect parents and youth, and help youth engage with the community. The idea of systems like What's Up was mentioned several times. However, everyone was so busy that no one wanted to take the lead to coordinate meetings and other initiatives required to make things happen. Indeed, as learned from the Young Activists Network experiments, time is a major concern for youth organizations and, in my opinion, was one of the biggest challenges affecting the implementation of What's Up in Lawrence.

In a meeting with the Youth Network Organizer in early November, I realized that, for the past couple of months since we had been working together, he had only been able to spend a few hours per week to focus on What's Up related matters. In addition to all of the responsibilities required for his job, he also had to take care of Movement City's volunteer opportunities, help out with some of the classes and be involved with other initiatives. Since the proper implementation and promotion of an initiative such as What's Up Lawrence would probably require fulltime commitment, it was not surprising that the program was evolving more slowly than expected.

According to him, the best way to help What's Up take off would be through the organization of a What's Up Central team. That team would then assume responsibility for promoting the system, providing user support and making sure it was used in ways that represented young people's ideals. Unfortunately, recruiting members for What's Up Central and providing the team with the necessary orientation would take a considerable amount of effort and would need to happen gradually over time.

In order to bring life and attention to What's Up before the end of the year, we thought it would be better if the Youth Network Organizer worked closer to the Movement City departments that produced audio-related content, in particular the poetry, choir and music production groups, and see how they could integrate What's Up as part of their activities.

By the end of November, several Movement City members had recorded their poems online and also uploaded audio files with the songs that they created. The choir even used Movement City's telephone to record the song that they were rehearsing. It was really interesting to see the comments that choir members and their friends added to that entry in the system. It was also interesting to realize that, with a little motivation and support, young people could enjoy the What's Up system.

Challenges and lessons learned

In mid-December 2006, I had the opportunity to sit down with the Youth Network Organizer and the executive director of Movement City to reflect about the evolution of What's Up in that organization. I was also able to interview Movement City members and staff and learn more about their general impression about What's Up and the suggestions they had to improve the system and the What's Up Lawrence experience. Below I summarize the major socio-cultural, technical, and organizational points raised in those conversations and complement them with personal reflections of my own.

Socio-cultural lessons. On the socio-cultural side, everyone that I talked to emphasized that a tool like What's Up has an important role to play in places like Lawrence. Some emphasized that, although Lawrence is a city with a large percentage of youth, it is hard for young people to feel that they are taken into consideration by the adults or that they have any power to effect change.

In that respect, the interviewees said What's Up can facilitate youth expression and help young people recognize themselves as a group that can be mobilized. They also said that, at the same time that What's Up can be representative of the collective, the fact the one can actually hear people's voices and leave comments to existing entries makes the system more personal and underscores the individuality of its members. The emphases

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on the group and on the individuals that are part of that group were both considered important elements for youth empowerment.

In addition to that, several of the people I talked to highlighted the fact that What's Up reopens questions about the digital divide and the income and class divides that are so easily forgotten, and that the system provided a way to address those divides without forcing people to give up on what they already had. In a way, it was as if What's Up extended the Web to the ones who do not have any or frequent access to it.

Technical lessons. On the technical side, people seemed to agree that the What's Up system evolved a long way since the testing of the What's Up prototype in Building Blocks 2005. Both the website and the phone components were now much more attractive and user-friendly than their previous versions.

Indeed, even though What's Up has only been actively used by a small fraction of its about 130 registered users, it proved useful as a tool to send reminders to the participants of a Movement City class, facilitate access to information about groups and individuals, announce events and even to disseminate poems and songs recorded by its members. A young person also said What's Up was a good tool to use when her computer broke down and that her What's Up extension number provided a good way for her to be contacted without having to reveal her personal phone number to strangers.

However, despite of the positive feedbacks, the interviews identified many aspects of the What's Up system that would need to be improved in order to bring it closer to the design goals set forth at the beginning of the experiment.

For instance, in respect to supporting the organization of community events, although Movement City members and staff used What's Up to promote "open mic" nights, the Mayoral Youth Forum and other events, many more tests still need to be developed to make sure the functionality provided is appropriate. Among other functions, the interviewees suggested the possibility of using What's Up to organize conference calls, broadcast events live, retrieve feedback, store photo albums, and also get templates for

posters and flyers. In theory, all of those ideas are possible. In practice, one should be careful about not overloading users with options that would be rarely used.

In fact, despite the improvements from the previous design experiment, What's Up still has to be simplified in many dimensions. As reported by Movement City staff, sometimes young people get confused about the combination computer-telephone, especially when the differences in functionality between the two are not understood or made clear. In particular, phone interactions seems too complex, lengthy and abstract, especially during the first couple of times a person calls the system and does not really know what to expect. Furthermore, as pointed by one of the interviewees, "people are already spoiled by higher technology" and the more it could be done to make the phone interactions more direct, or to allow users to record announcements, voicemail and calendar entries directly from the website without having to move back and forth to and from the telephone, the better.

In talking about usability, additional work also needs to be done to make the system truly accessible and inclusive to young people who are not literate, do not have access to computers, or do not speak English. In particular, due to the way things evolved, What's Up has barely been used by youth of 10 to 13 years old, a critical age in the development of civic participation attitudes and skills. One wonders how difficult it would be for young people of that age to navigate the audio menus and handle the large number of options available in the system.

As suggested by participants of the design experiment, one alternative would be to add voice recognition to What's Up so that people would be able to navigate the system by saying commands such as "check upcoming events", "create new group" or "call John". Another alternative would be to create a minimalist version of What's Up with only the subset of the features that would make sense to the younger users. Finally, some suggested the creation of a special support extension number with real people answering community-related questions about events and groups, and also replying to more technically-oriented questions about how to use specific features of the system.

During the fall 2006 design experiment, large improvements have been done to make What's Up more organic and bring it closer to young people's lifestyles and technological habits. Examples of that include the implementation of the mechanism that facilitates the integration of What's Up and MySpace, and the one that connects What's Up voicemails with the regular email system.

In addition to making the system more organic to individuals, the fall 2006 experiment showed that there is a need to make What's Up also more organic at the organization level, so that staff members do not have to spend too much time adding information to the system and, in the case of the managing organization, have better ways to find out what is happening in the system and integrate it already existing databases. The logs, statistics and control panels provided by What's Up were a good start, but much more would be needed in a fully functional system.

In the spirit of fostering participation and user ownership, better statistics and control structures should also be made available to the young users themselves, so that they too acquire a more precise notion of the ways the system is evolving and how the member's individual actions, i.e. the addition of new events, users, etc., contribute to the larger community.

In order to reduce administrative load, our intention was to build What's Up as viral system and provide mechanisms for users to promote the system, recruit new users, and be recognized by their efforts. On the promotion side, several users said they would be happy to include What's Up Lawrence ads in their websites or distribute flyers to their friends. On the recruiting side, the need to get parental consent to make the system more secure and trustworthy (together with the original research survey that prospective users needed to fill in the Building Blocks 2006 experiment), turned registration into a multi-step process that was very hard to be done by young people themselves.

After the experiment was over in December 2006, I managed to implement a mechanism that allows users to create accounts for themselves just by going to the What's Up website and filling in a simple form with basic account information and an optional field specifying who referred them to the system. The online-created accounts provide new

users with personal extensions and allow them to send and receive voicemail messages. However, in order to be able to actually publish announcements, create groups or add events to the community calendar, the user would have to be 'verified', i.e. sign and bring appropriate forms to Movement City or a partner organization. Movement City agrees the new feature facilitates registration and provides users with a glimpse of What's Up without compromising trust or safety.

Organizational lessons. For some reason, perhaps due to the fact that the system was telephone-based and that telephones are common place in our society, nobody really expected that What's Up would require so much support to be adopted.

As I realize today, there are at least 3 different ways in which an organization may decide to adopt What's Up: a) as an outgoing communication channel to promote initiatives to the community at large; b) as a tool to support the development of specific youth participatory initiatives in the neighborhood; and c) as a way to facilitate communication to and within different departments of the organization.

In the design experiment presented above, Movement City ended up using What's Up mainly as in options 'a' and 'c'. The alternative 'b' would probably involve the creation of a special class in the organization, perhaps something similar to the Young Activists Network described in the previous chapter, but with the emphasis on teaching young people to organize community events. Unfortunately, while option 'a' was relatively simple to be done, the alternative 'c' required affecting the internal communication structure of the organization, something that could be challenging, especially in places like Movement City where people sometimes felt they were already in touch with one another on a regular basis and therefore would not need What's Up for that.

In fact, for the system to make more sense and be able to attract a more representative mass of users, it would probably have to include people and information beyond Movement, i.e. things that current members would not necessarily know just by talking to their friends and that would be hard to find out without the system. In that sense, rather than concentrating our efforts in a single organization such as Movement City, things

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would probably be better if we had worked with additional organizations right from the beginning.

In any case, the successful spread and maintenance of What's Up would require the government or a local organization to assume responsibility for the system and do everything that is necessary to make sure it achieves its mission. For instance, to be inclusive, initiatives such as What's Up Lawrence would require an active effort to reach out and support the ones who are traditionally unreachable. To be youth-led, they would need the implementation of community polls and the organization of a youth board that is representative of the young population of the region. To be sustainable, the initiatives would probably require the constant search for volunteers, collaborators and funding partners, as well as the permanent renovation of its methods and tools to suit the new demands. To be scalable, they would require the production of special materials and ways to exchange lessons learned.

As became apparent in the What's Up Lawrence design experiments, even with better technologies the implementation of those tasks require a considerable amount of time, effort and commitment from the leading organization. In a recent conversation with Movement City's executive director, we both realized that, even though we both expected Movement City to assume that role, it would be too much for that organization to do everything that would be expected. The idea of having a Youth Network Organizer was a shot in the right direction, but he would require more time, orientation and collaboration in order to do his job.

As suggested by the Movement City director and several of his staff, perhaps the best solution would be to create a special organization just to focus on the implementation, spread and adoption of the What's Up system. Among other things, such organization should:

- Promote What's Up to individuals, youth groups and formal youth-related organizations;

- Organize events to celebrate young people, discuss common issues, and foster more interaction and collaboration among youth groups and organizations;

- Facilitate the creation of a board representing youth and youth organization to stir the uses of the What's Up system;

- Train Youth Network Organizers and facilitate the adoption of the What's Up system by youth organizations;

- Devise mechanisms to improve the usability of the tool and to assess the impact of youth participatory initiatives in the City;

- Improve What's Up and implement new tools to foster youth participation.

As it is going to be discussed in the conclusion chapter, there are many overlapping and complementary points between the What's Up Lawrence and the Young Activists Network initiatives. Perhaps the next generation of technology-supported initiatives for local youth civic engagement should be built from the lessons learned from both of them.

6. Conclusions

As described in the research design chapter, this thesis aimed at clarifying the following questions:

1) What are the main attributes of learning initiatives that foster youth participation and local civic engagement?

2) How can digital technologies support the implementation of those learning initiatives in youth technology centers?

3) What attributes should digital technologies have in order to become more suitable for that task?

4) What other factors have to be in place, besides the technology, for those initiatives to succeed?

In order to answer those questions, I proposed a novel framework to help in the analysis and design of technological-initiatives for social empowerment. In the spirit of the design-research lifecycle, the new framework emerged from and supported the development of two main design experiments that focused primarily on the empowerment of young people vis-à-vis the places where they live.

As part of the Young Activists Network experiment, I collaborated with youth technology centers from different parts of the world in helping them organize local young people to address personally meaningful community issues. As part of the What's Up Lawrence initiative, I developed What's Up, a special telephone- and web-based neighborhood news system for young people, and collaborated with a youth organization from Lawrence, MA in using that system to help young people organize community events and find out what was happening in their community.

The remaining of this chapter is organized as follows:

- Section "**6.1 Analysis of the design experiments**" tries to answer the first research question addressed by this thesis. In order to do that, it uses the proposed framework to compare the design experiments described in the previous chapters and, based on the comparison, highlights the main elements that would need to be considered in the development of the next generation of technological initiatives for social empowerment. The section concludes with a discussion about the contributions and limitations of the proposed framework;

- Section "**6.2 From powerful to empowering technologies**" tries to answer the second and third research questions of the thesis. It discusses the way technology was used in the Young Activists Network and the What's Up Lawrence initiatives and identifies guidelines for the design of technologies to foster social empowerment;

- Finally, section "**6.3 The need for a new kind of empowering organization**" tries to answer the fourth research question. In order to do that, it describes the characteristics of a new kind of organization that would have to be created to support the development of technological initiatives for social empowerment.

6.1 Analysis of the design experiments

As seen by the framework described in chapter 3, technological initiatives for social empowerment should be analyzed according to a series of variables that can be grouped into 5 main categories:

- the "approach" variables, which characterize the goals and activities of the initiative;

- the "setting" variables, which define the attributes of the space where those activities are supposed to happen;

- the "empowerment" variables, which describe the expected outcomes of the initiative;

- the "climate" variables, which help understand how the initiative evolves over time; and

- the "system" variables, which affect the initiation, replication and sustainability of the initiative.

In this section, I use the proposed framework to analyze the Young Activists Network and the What's Up Lawrence initiatives and identify lessons to be considered in the implementation of future technological initiatives for social empowerment. In the end, I discuss the affordances and limitations of the proposed approach itself.

Analysis of the approach variables

In this section, I analyze the Young Activists Network and the What's Up Lawrence initiatives according to the "approach" variables suggested by the framework proposed in chapter 3 (Table 12).

Goal of the initiative. As discussed in the background chapter, while traditional community technology initiatives tend to focus on individual development and emphasize information access and technical training as ends in themselves, the design experiments conducted in this thesis focused on the development of individuals as active and critical participants of their communities and emphasized the use of technology as a means towards those goals.

By seeing social empowerment from a combination of "youth participation" and "empowerment theory" perspectives, the Young Activists Network and the What's Up Lawrence initiatives focused not only on helping young people become more active and critical participants of society, but also on helping the overall community become more open and receptive to young people's ideas.

From a theoretical point-of-view, such combination proved to be extremely rich, with empowerment theory providing a context to situate youth participation in relationship to the broader notions of organization and community empowerment, and youth participation providing empowerment theory with more in-depth references about the different aspects that have to be considered when empowering young people to become active and critical participants of society.

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Table 12 - Comparison of YAN and What's Up approach variables

Approach variables	Young Activists Network	What's Up
Goal of the initiative	• Foster youth participation and local civic engagement.	• Foster youth participation and local civic engagement.
Intended audience	• Aimed at young people 10-18 from the youth technology center. Worked primarily with youth 10-13 from the center.	• Aimed at young people 10-18 from the community at large. Worked primarily with youth 14-18 from the center.
Scope	• Focus on the local community.	• Focus on the local community.
Activity organization	• Inspired by youth-oriented participatory-action research methods. • Focused on helping young people identify and address personally meaningful community issues. • Work with small groups of young people in youth technology centers.	• Inspired by the educative cities methods. • Focused on helping young people organize personally meaningful community events. • Work with small groups of young people in youth technology centers. • Recognize the work already developed by formal and informal youth groups in the community.
Required resources	• Technology available at the youth center. • Training and support materials. • External volunteers to facilitate youth groups at different youth centers.	• Technology available at the youth center. • Training and support materials. • External volunteers to help in the organization of a local team to assume ownership of the project in the community. • What's Up System. • Telephones.

Intended audience. Both the Young Activists Network and the What's Up Lawrence initiatives originally aimed at fostering the active participation and engagement of youth of 10 to 18 years old in their local communities. Although the youth participation literature highlights the differences between age groups, it was only with the development of the actual experiments that it became clear to me how youth from different ages and backgrounds differed from one another in terms of socio-cognitive capabilities, values, familiarity with technology, and perceptions of the world.

For instance, while the Young Activists Network seemed to be more attractive and appropriate for youth 10 to 13 years old who were excited to work with adults, were optimistic about community change, and did not care as much about their personal image as the older youth, the What's Up Lawrence initiative seemed to be more attractive to young people older than 14. Although I believe younger people would also be interested in joining the What's Up Lawrence initiative, they would probably require a different kind of adult support and perhaps a simplified set of tools to help them in the organization of their own community projects.

Scope. Both the Young Activists Network and the What's Up Lawrence initiatives focused on the neighborhood, i.e. the streets, parks and other spaces outside homes, schools and after-school centers that are part of young people's lives. Implementing projects outside the organization's buildings posed several logistical challenges requiring among other things, special permits from parents, transportation to take the youth to different places, and extra personnel to help make sure everything was under control. In spite of those challenges, spending time in the community provided young people with good opportunities to get to know more about how things worked in the place where they lived, allowed adult facilitators to know more about the youth they worked with, and also opened space for local adult residents to be more exposed to young people's energy and ideas.

Activity organization. Even though the Young Activists Network and the What's Up Lawrence initiatives had similar goals, audience and scope, the latter was built from the

lessons learned from the first and differed considerably from it in the organization of its activities.

For instance, while the Young Activists Network activities helped young people identify and address personally meaningful community issues, the What's Up Lawrence initiative aimed at helping young people organize personally meaningful community events. Moreover, while the Young Activists Network facilitators did their best to help young people from youth organizations implement their projects, the What's Up Lawrence initiative used technology to transform Lawrence into a place in which young people could create their events almost by themselves, without the need to come to a particular youth organization to do so. From a theoretical perspective, while the Young Activists Network followed a participatory action-research approach, the What's Up Lawrence initiative was based on the educative cities ideas described in the background chapter.

Of notice, the What's Up approach seemed to foster a more positive and collaborative attitude towards youth participation than the Young Activists Network and managed to address many of the challenges inherent to the Young Activists Network approach, specially the ones that had to do with local community outreach. In spite of that, it seems that the mere usage of the What's Up system as promoted by the What's Up Lawrence experiments is unlikely to foster the depth of the discussions that young people and adult facilitators had as part of the Young Activists Network. For that to happen, youth organizations would require specific orientation, additional support, and better tools. As will be discussed below, the development of more appropriate technological initiatives for youth empowerment and local civic engagement would probably require a combination of the positive aspects of the Young Activists Network and the ones from the What's Up Lawrence initiative.

Required resources. As described in the design experiments, the Young Activists Network was designed in such a way that it could be implemented even without any digital technology. Tools such as cameras, printers and Internet could bring great contributions to projects, but were not essential. This flexibility in terms of resources allowed the Young Activists Network to operate in all sorts of community organizations,

ranging from Computer Clubhouses with high-end multimedia equipment to the youth group in Sao Paulo that relied mostly on a digital still camera and an audio recorder.

However, despite the low-technological requirements, the organization of YAN activities (including field trips to the community, session planning and facilitation, etc) required about 6 to 10 hours per week for each staff and volunteer directly involved in the project, and that turned out to be unrealistic for many organizations.

The What's Up Lawrence initiative tried to minimize the human effort required in the Young Activists Network by building as much as possible on local resources, on activities that were already happening in the community and on local volunteers. Nevertheless, What's Up would still require a small team and resources to maintain the What's Up system infrastructure, promote the initiative around the community and provide support to its participants.

Analysis of the setting variables

The setting variables characterize the locations where the activities of the empowering initiative are supposed to happen (Table 13).

Space organization. Most of the Young Activists Network sites were hosted by Computer Clubhouses, youth technology centers that are rich in technology and allow young people to come and go at any time. Although having technology at hand and freedom to participate in the sessions can be seen as positive, in many situations the availability of technology at hand and the presence of people not connected to the initiative ended up distracting the participants. In general, activities ran better when young people worked in the arts room, where they had better space for group exercises and could concentrate on the project discussions.

In the What's Up Lawrence initiative, the idea was to create an infrastructure that recognized youth in their everyday activities and allowed young people to publish and access information from wherever they were and whenever they wanted to. However, for that to happen, a more distributed kind of support would have to be provided to foster the

appropriate development of the initiative. Unfortunately, due to the challenges described in chapter 5, it was not possible to try that type of support during this thesis.

Setting variables	Young Activists Network	What's Up
Space organization	• Youth technology center.	• Aimed at formal and informal youth groups and community at large. Worked primarily with local youth center.
Accessibility	• Limited to members of the youth organization and to the scheduled session times.	• Open to anyone with access to the What's Up system. • Limited by the usability of the system or constrains imposed by the leading organization.

Table 13 - Comparison of YAN and What's Up setting variables

Accessibility. Ideally, the empowering initiatives defended in this thesis should be made available and accessible for all, with special emphasis on the traditionally underserved. However, as seen in the previous chapters, sometimes organizational or technical barriers prevent the inclusion of those who would benefit the most from the initiative. For instance, in the Young Activists Network, organizational fees, inappropriate session schedule, and lack of information prevented many youth from joining the projects. The What's Up system contributed to lower those barriers by providing a community-wide communication infrastructure that, in spite of usability and organizational constrains, could be used even by young people who were semi-literate and did not have regular access to computers.

Analysis of the empowerment variables

According to the proposed framework, technological initiatives for social empowerment should be analyzed in relationship to the way in which they contribute to individual, organizational and community empowerment (see Table 14).

Individual empowerment. While the What's Up Lawrence initiative opened new possibilities for community-wide communication and expected youth to use the What's Up system to organize and promote events, the Young Activists Network worked directly with young people and actively helped them in the implementation of their community projects. In the original What's Up Lawrence plans, the goal was to have a group of local youth and adults assuming the role of facilitators, managing, promoting, and supporting good uses of the What's Up system. Unfortunately, it was not possible to organize that group as part of the What's Up experiments developed thus far.

This research has revealed that, in order to foster the depth of reflection and discussion of the Young Activists Network, the What's Up initiative would need a group of people that, similar to the Young Activists Volunteer Task Force, worked side-by-side with youth and facilitated the implementation of their community projects. In my opinion, that would require either the creation of a new What's Up-specific program at youth organizations or at least helping existing staff add information about the existing programs into the What's Up system.

Organization empowerment. Both the Young Activists Network and the What's Up Lawrence initiatives inspired youth organizations to discuss important issues related to outreach, social inclusion and youth participation. Unfortunately, although in many cases the Young Activists Network helped organizations become more empowering to youth (at the individual level), that was not enough to help those organizations become empowered enough (at the organizational level) to continue the projects by themselves. As a result, most projects died after the Young Activists Network volunteers had to leave.

Table 14 - Comparison of YAN and What's Up empowerment variables

Empowerment Variables	Young Activists Network	What's Up
Individual empowerment	• Helped improve self-confidence. • Fostered ability to work in groups and take the lead. • Raised awareness to issues and resources from the local community. • Fostered contextualized learning of technical skills. • Helped adult facilitators develop more appreciation for youth participation.	• Helped users become more aware of community events. • Opened new inclusive and community-wide venue for personal expression and communication. • Would require specific initiatives to foster other individual empowerment attributes.
Organizational empowerment	• Raised questions about the capacity of the organization to be inclusive and outreach to the surrounding community. • Fostered a few connections with other community organizations. • Was unable to empower partner organizations so that they could keep implementing the projects by themselves.	• Fostered discussions about social inclusion, Digital Divide and local outreach. • Provided new entry points for the organization to be reached by the community. • Facilitated outreach to members of the What's Up system. • Was unable to empower the partner organization so that it could keep implementing the project by itself.
Community empowerment	• Helped in the implementation of street clean-ups and other initiatives that contributed to improve the local community	• Open new venue for community-wide information exchange.

In the What's Up Lawrence initiative, the What's Up system was put in place to facilitate community-wide outreach and make it easier for youth groups to promote their projects and obtain local collaborators. However, additional support would be required to help youth groups to adopt the system as part of their activities and eventually contribute to its management and maintenance.

Community empowerment. In terms of overall community impact, the Young Activists Network helped in the implementation of street clean-ups, the spread of children rights posters, and the development of other projects that contributed to the local community and fostered a positive image of youth. The What's Up Lawrence initiative opened a new channel for community-wide information exchange, but it would still require a few technical improvements and additional support, perhaps an official connection with governmental agencies and other youth organizations, in order to achieve the critical mass of users required for the initiative to become more representative of Lawrence's youth and foster the creation of new youth-led projects around the city.

Analysis of the climate variables

The analysis of climate variables provides a good means to understand how a particular initiative evolved over time (see Table 15):

Activity engagement. This climate variable has to do with how attractive or relevant the empowering initiative is for the individuals and community organizations that are involved with it. As it turns out, engagement was perhaps the greatest challenge in the implementation of the Young Activists Network. As described in chapter 4, youth activism and participation are abstract concepts that cannot be taught in classrooms. They require opportunities for young people to be directly involved in community projects that are meaningful to them. Sadly, it was really hard to get young people to commit to the YAN projects while there were other competing initiatives at the youth centers that did not require as much commitment and offered more immediate rewards. Indeed, it took the Young Activists Network experiment several design attempts to finally achieve an approach that genuinely motivated young people to keep coming back to the YAN sessions.

Table 15 - Comparison of YAN and What's Up climate variables

Climate Variables	Young Activists Network	What's Up
Activity engagement	• Operated as yet-another-initiative that competed with the ones already being offered at the center. • Sometimes perceived as confrontational in relationship to other community-development initiatives. • Would require specific efforts to become engaging to the top management staff of the partner organizations.	• Added value to existing initiatives by providing them with a venue for promoting themselves and being reached. • Perceived as something fun and positive by adults and organizations from the region. • Would require improvements to become more engaging to young people.
Activity participation	• Fostered opportunities for young participants to take the lead in community projects. • Was unable to involve young people in the organization of the initiative itself.	• Facilitated opportunities for young people to express themselves in the community context. The involvement of participants in decision-making would require additional efforts. • Was unable to involve young people in the organization of the initiative itself.
Activity outreach	• Limited to activity participants and some of their friends.	• Open to anyone registered in the What's Up system • Requires the promotion of the What's Up system to the community at large.

Technology usage	• Provided meaningful context for participants to use cameras, computers and other technologies available at the youth center in the analysis, implementation and documentation of their community projects. • Highlighted the need for more appropriate tools to help young people execute the different tasks associated with their projects.	• Participants used primarily the What's Up system. • The use of additional tools would be dependent on the implementation of specific initiatives. • Identified several aspects of the What's Up system that would require improvement in order to better support the organization and promotion of community events.

Unfortunately, even when young people managed to complete their projects – which were by no means small feats – it was extremely challenging to attract local attention and additional support to the young activists.

Based on such challenges, What's Up Lawrence was designed as an initiative that, due to its focus on the organization and promotion of community events, added value to existing youth initiatives (rather than compete with them), and also portrayed a more friendly and collaborative image of youth. However, in spite of the friendlier image and the positive support received from the director of our partner organization in Lawrence, the technical and organization issues described in chapter 5 limited the engagement of young people with the initiative. Hopefully, the next attempt to implement What's Up will be able to address those issues.

Activity participation. This variable has to do with the availability of opportunities for participants to practice decision-making within the initiative. In the Young Activists Network, adult facilitators consciously created space for young people to decide which project to implement, mediate discussions, and express their voice. In the What's Up

Lawrence initiative, young people had opportunity to use the system to express their ideas, but there was no particular effort to help participants reflect about their community or work in groups.

At the broader level, even after several attempts, both initiatives failed to involve young people in the organization of the initiatives themselves. Although in the long term it would be good to have more youth participation, I believe the organizers of the initiative were already feeling too overwhelmed with the existing tasks to be able to invest the extra time that would be required to recruit interested youth and help them assume more leadership over the initiative. This is an issue that will have to be addressed in future attempts to implement youth empowering initiatives.

Activity outreach. Outreaching to the local community was another major challenge faced by the Young Activists Network. Even though young people had put a lot of effort into the implementation of their community projects, it turned out to be very difficult to attract relatives, community residents, local organizations and even other youth to recognize the work done and contribute to the development of new projects. Among other things, people were already busy with work and other activities, and community organizations did not have an established channel that facilitated communication to and from the larger community. As a result, the only people who participated in the activities and celebrations were the ones who were already part of the organization.

As discussed in chapter 5, the What's Up system opened a community-wide communications mechanism that offered a venue through which people could publish community announcements, promote local events and exchange messages to one another. The only thing is that the system itself had to be promoted to the community at large in order to fulfill its potential. During this thesis we were only able to work with one community organization. The next step would be to invite other organizations and individuals to join the initiative.

Technology usage. In general, the Young Activists Network used the technology available in the youth center both as a way to attract youth to the initiative as well as to help participants in the implementation of their projects. Among other things, young

people used scanners to digitize images, the Internet to search for references, cameras to document their projects and interview people, and a variety of software to create flyers, posters and presentations. Although those tools proved to be useful to the projects, in many cases they were either too complex or did not offer the necessary functionality. It would be great, for instance, if young people had a neighborhood mapping tool and other software that they could use to reflect about their community and express their opinions about the places where they live.

In the What's Up Lawrence initiative, participants used primarily the What's Up system. As discussed in chapter 5, the system proved to be useful in the promotion of community events and local talents, facilitated group communication, and provided an access point to youth who did not have access to computers or the Internet. Still, there are many features and improvements that could be added to the system so that it becomes more useful, manageable and attractive.

Based on this thesis' design experiments, one could even think about building and integrating the tools originally conceived for YAN into What's Up and transforming the system into a complete toolkit for the implementation of youth-led community projects.

Analysis of the system variables

The analysis of system variables helps identify the challenges inherent to the initiation of the initiative, its replicability and its long-term development (see Table 16):

Sustainability. As discussed in the "required resources" variable, the main cost associated with the Young Activists Network was the availability of volunteers or extra people to collaborate with staff from partner youth organizations in the planning and execution of the YAN sessions. Unfortunately, the location, timing and effort associated with those sessions make it extremely difficult to recruit external volunteers for the initiative.

System Variables	Young Activists Network	What's Up
Sustainability	• Dependent on external volunteers to carry the work in the youth technology centers.	• Dependent on small team to promote What's Up and provide support to individuals and youth organizations. • Requires constant investment to maintain the What's Up server and its phone lines
Scalability	• Dependent on the availability of teams of volunteers to work at the different communities.	• Dependent on the capacity of the server to support multiple communities.
Spread	• Dependent on the availability of teams of volunteers to work at the different youth technology centers within the same community.	• Dependent on the capacity of the system to attend large numbers of users from the same community.
Ease of adoption	• Worked as an organization-within-an-organization. Its adoption depended on local interest and on the availability of time and space for the activities.	• Dependent on the level of involvement intended by the organization.

Table 16 - Comparison of YAN and What's Up system variables

To compensate for those challenges, the What's Up Lawrence initiative was designed to rely as much as possible on local volunteers and resources. As of today, its main costs and efforts have to do with the organizing of a local team to promote and support good uses of the What's Up system in the broad community. In addition to those, there are also the costs associated with the maintenance of the system's server and telephone lines. Fortunately, the current cost of the What's Up phone number is relatively low – about U$13.00 per month, with up to 4 people to calling the system at the same time. Moreover, for having been developed as an open-source tool on top of other open-source

components, it is expected that many bugs and improvements to the system may be implemented by the developer's community itself.

Scalability. This system variable has to do with the challenges inherent to replicating the initiative to multiple sites. Concerning the Young Activists Network, the scalability of the initiative is directly dependent on the availability of facilitators to work with young people in their projects. As for What's Up, its scalability is dependent on the organization of local teams to promote the system in the new setting or community and, if necessary, also on the replication and adaptation of the software to fit the local languages. Depending on the choice, the software for multiple communities can run from the same server, and that computer can be located in any place that has good access to the Internet. In the case of What's Up Lawrence, the server was located in my office at MIT.

Spread. This variable has to do with the potential of an empowering initiative to be expanded within the same setting or community. Assuming that empowering initiatives should be able to reach as many people as possible, it is desirable that they do so in ways that do not compromise the quality of the activities or overload the organizing team. In the Young Activists Network, it was expected that youth groups produced some sort of video or presentation that told the story of their project and helped inspire young people and adults to become more actively engaged with their communities. In the What's Up Lawrence initiative, it was expected that the more youth-oriented events and announcements were posted in the What's Up system, the greater the motivation would be for the development of additional youth initiatives.

One of the original guidelines of the What's Up system emphasized that the system should be "viral", i.e., that members themselves should be able to invite others to join the What's Up network. However, due to issues of security and privacy, it was then decided to require parental consent for youth under 18 and centralize the registration process in our partner organization. Those decisions ended up compromising the viral spread of the What's Up Lawrence initiative.

As for resources, the spread of initiatives tends to be similar to their scalability. For the Young Activists Network, that would depend on the availability of facilitators to work

with youth at different organizations. For What's Up, that would depend primarily on the capacity of the system to handle the additional users, and on the availability of extra support resources.

Ease of adoption. This variable has to do with the challenges inherent to starting the initiative in a new setting. It is interesting to notice that, since the Young Activists Network operated almost as an "organization-within-an-organization" with its own personnel and methodology, its adoption depended mostly on the interest from the partner organization and on the availability of time and space for the activities. For What's Up, the ease of adoption would depend on the level of involvement intended by the organization. If it wanted to use the system to promote its own events, the level of effort required would be relatively low. However, it the organization decided to assume a more active instance in relation to the initiative and crate new programs or motivate youth to organize their own community events, the level of effort would be much higher.

Discussion

The framework proposed in this thesis proved to be very useful in the design and analysis of the Young Activists Network and the What's Up Lawrence initiatives. In general, discussions about technology and social development refer to concepts such as accessibility, inclusion, sustainability, scalability, empowerment and participation without necessarily clarifying what they mean by those terms or defining the relationship among them. The proposed framework puts those terms in perspective and helps understand which aspects of technological initiatives for social empowerment might require special attention.

In particular, the analysis of empowerment variables as seen from individual, organizational and community perspectives leads organizing institutions to look beyond their traditional focus on technical training and individual development and aim for initiatives that contribute to the mutually supportive development of people and the communities they are part of. Moreover, by integrating accessibility and participation in the analysis, the proposed framework also contributes to the creation of initiatives that

take even the most underserved into consideration and foster the development of more inclusive and representative societies.

By looking at the analysis of the Young Activists Network and the What's Up Lawrence initiatives done above, the framework made it clear that the latter initiative seemed to be easier to scale, spread and sustain itself than the former. However, the framework also highlighted the fact that, although the What's Up Lawrence initiative facilitated connections at the organization level, the Young Activists Network initiative seemed to be more empowering at the individual level. While What's Up Lawrence emphasized inclusion and community outreach, YAN focused more on the depth of the experiences provided to its participants.

In addition to facilitating the comparison between the Young Activists Network and What's Up Lawrence, the framework also helped in the identification of limitations that were common to both initiatives. For instance, as highlighted by the "activity participation" variable, during the development of this thesis neither of the initiatives was able to involve young people in the decision-making of the initiative itself. In the end, both initiatives were managed by the adult organizers. In addition to that, as highlighted by the "activity outreach" variable, both initiatives failed to outreach to the larger community that exists beyond the youth organizations they worked with. As described in chapter 5, although the What's Up Lawrence initiative was better structured to reach out to the broad community, technical and organizational difficulties ended up preventing it from doing so.

Based on the above analysis, perhaps the next best step in the evolution of the Young Activists Network and the What's Up Lawrence initiatives would probably be the development of a new empowering initiative that combined the advantages of both of them and minimized their challenges. Among other things, the new experiment should use What's Up, or a system with similar capabilities, as an underlying communication channel. However, like in YAN, it should also have community organizers helping young people and youth organizations establish deep connections with the place where they live. In my opinion, the implementation of such an initiative would require a special

kind of empowering organization. The attributes of that kind of organization are discussed in section 6.3.

Finally, it is important to realize that, even though the proposed framework was useful in the analysis and design of the experiments developed in this thesis, the very attributes of the framework have been refined based on the evolution of the experiments themselves and may not necessarily make sense for other kinds of empowering initiatives. For instance, the "activity engagement" variable was only added after I realized that youth engagement was a major obstacle for the implementation of the Young Activists Network. Similarly, the "ease of adoption" variable was only incorporated after we faced difficulties in the implementation of the What's Up Lawrence initiative. Although "ease of adoption" might be relevant for a wide range of empowering initiatives, I am not sure "activity engagement" would be as central in empowering initiatives organized for adults, for instance.

More generally, it must be admitted that both of the design experiments studied in this thesis focused on young people and youth technology centers. It would be interesting to see how the framework would have to be adapted in order to be used in initiatives that worked with different kinds of populations, different age groups, or alternative settings.

6.2 From powerful to empowering technologies

When I joined the MIT Media Lab in 2001, I did not believe so much in the creation of new technologies for social empowerment. In my opinion, with the recent extraordinary enhancements in computer processing, communication, mobility and usability, existing technology was already powerful enough; what we needed was better ways to apply the potential of the new tools to help underserved individuals and communities assume control over matters that affected their lives.

With that in mind, I started the Young Activists Network as a means to find an appropriate approach to foster youth participation and local civic engagement using whatever technologies were available in our partner community organizations. Unfortunately, even working with organizations that had state-of-the-art computers and

software, it did not take long to realize that existing tools were either too complex or lacked the functionality required for young people to implement personally meaningful community projects. Moreover, the very way in which the organizations were structured created barriers to whom would have access to the technologies and what could be done with them.

Ideally, we would like youth to have tools that overcame the limitations of community organizations and made it easier for young people to communicate with one another, document their lives at home and on the streets, create maps of the neighborhood, reflect about their social networks, make presentations and more, all of that without having to spend too much time acquiring technical skills or being segregated by age, location, language, socioeconomic situation or skill level.

The What's Up system represented my first attempt to implement a technology specifically designed to empower young people, the organizations that worked with them, and the communities where they lived. The goal was to create a telephone-based neighborhood news system, something that everyone, even the illiterate or the ones who had no access to computers, could potentially use to express themselves, find out what was happening, and become more actively involved with the world around them.

Based on the feedback from youth and staff from our partner organization, What's Up evolved into a system that not only facilitates local communication and outreach, but also provides traditionally "unconnected" youth with a presence on the web and access to the benefits of the Internet. By dialing the system's toll-free number, young people used What's Up to send and receive voicemail messages, join groups and learn about community events. They also used the telephone to record personal poems and songs that could be later played on their MySpace page or downloaded into their iPods.

As part of the development of the What's Up system I ended up creating a series of software components that handle voicemail, groups, community events, audio announcements, phone extensions, audio menus and other functionality that can potentially be used in the implementation of What's Up-like systems that bring together telephone and web. The underlying architecture of the What's Up system can also be

easily extended to incorporate new components. One could imagine, for instance, specific components to broadcast community events live to phone and web users, to facilitate conference calls, or organize community polls. One could even envision the integration of What's Up with geographical information systems (GIS) and, with that, be able to send audio announcements to individuals who live in particular streets, access news associated with a particular region, or visualize maps highlighting the different community connections established through the system. Although the current version of the system has been created to be accessible by any kind of phone, the system can also be extended to benefit from text messaging and other capabilities that are commonly available in mobile phones. What's Up is being released as open-source software and several organizations that work with youth, the homeless, disaster relief, and local community development have already demonstrated interest in it.

As mentioned earlier, What's Up is one of many tools that can facilitate the implementation of empowering initiatives. By using the framework described in chapter 3 to reflect about the design experiments in this thesis, it is possible to identify a series of guidelines to be considered in the implementation and analysis of technologies for social empowerment. On Table 17, I summarize some of those guidelines.

It is worth mentioning that one should not expect a single tool to accomplish every single item in the list or to support all the different aspects involved in an empowering initiative. When considering technologies for a particular initiative, one should think about the set of tools that best fulfill the different variables of the proposed framework. In that sense, one could imagine a tool like What's Up being used in combination with a neighborhood mapping tool for kids, a simple-to-use video story creation tool, cameras, and even street kiosks and special devices that enabled people to find out what was happening and engage with the different aspects of their community life.

Table 17 - Guidelines for the implementation of socially empowering technologies

Approach variables	Activity organization	• The technology should support the different activities inherent to the approach. For instance, in the case of the Young Activists Network, it should support the creation of maps and diagrams, facilitate communication among participants, help in the creation of documentaries, etc. Likewise, in the case of the What's Up Lawrence initiative, it should help young people in the different tasks inherent to the organization of personally meaningful community events.
	Required resources	• The technology should complement the resources already available. It should be compatible with the other devices or tools that already exist and should only replace them if the advantages are clear. • The technology should fit the knowledge and skills already available. The more intuitive and simple to use the technology is, the less training and support it will require.
Setting variables	Space organization	• The technology should support the activities in the different settings where they are going to happen. Depending on the initiative that can mean youth technology centers, schools, homes, parks, streets, or other places. • When not in use, the technology should not be a stumble block for the development of the activities associated with the initiative.
	Accessibility	• The technology should be inclusive. It should support as many people from the intended audience as possible, independent of race, gender, age, location, time of day, language, technical background, etc. • The technology should be organic, i.e. it should be easily accessible and usable, fitting as much as possible into people's daily routines, lifestyles and capabilities.

Empowerment variables	Individual empowerment	• The usage of the technology should be perceived as something positive. The technology should be seen as something "cool" or attractive so that individuals feel proud of using it or being associated with it. • The technology should be easily integrated with other technologies that are considered mainstream. For instance, even though several What's Up users did not have access to the Web on a regular basis, it was important for them that the system allowed them to have a presence online. • The technology should allow for personal customization and ownership. This was one of the most asked attributes for the What's Up system. Young people really wanted personal pages that they could customize in any way they wanted and, with that, highlight their identity within the larger system. • The technology should help individuals become aware of their actions and contributions to the groups and communities they are part of. In the case of the What's Up system, by going to the profile pages users could see the entries they have published in the system, the groups they were part of, the number of people they referred to What's Up, etc. • Privacy permitting, the technology should help individuals become aware of the actions and contributions of other individuals. In the What's Up system, it was possible to check the author for each entry posted in the system. That feature allowed for recognition of positive contributions, but it also served to prevent the posting of malicious entries.
	Organizational empowerment	• The technology should make it easier for organizations to interact with their members as a group or as individuals. • The technology should help organizations define their identity to their members and other organizations. • The technology should make it easier for organizations to access and become accessible by others.

	Community empowerment	• The technology should help individuals and organizations have a sense of the community as a whole. For instance, the number of individuals and organizations, the aggregate amount of contributions posted, etc.
Climate variables	Activity engagement	• The technology should be attractive and pleasant to use. • The technology should contribute to maximize the interesting and relevant aspects of the activities developed and reduce the ones that may distract users from the main focus of the initiative. For instance, in the Young Activists Network, care had to be taken so that the complexities and effort required in video editing did not distract the focus of initiative from social change to video production.
	Activity participation	• The technology should provide means for users to provide suggestions and criticism about the tool itself. • The technology should make it easier for users to manage the initiative itself. That can be done with the provision of appropriate statistics and configuration tools.
	Technology usage	• The technology should provide means for designers to identify potential problems and also to figure out which features are the most and least used.
System variables	Sustainability	• The tool should be easy to maintain.
	Scalability	• The tool should be low-cost to replicate.
	Spread	• The tool should be easy to expand. • The usage of the tool should motivate new users to adopt the tool.
	Ease of adoption	• The tool should be easy to install and configure.

6.3 The need for a new kind of empowering organization

One of the most important lessons that I learned during this thesis is that empowerment requires a lot of human support. In order to implement personally meaningful community projects, young people need adults working with them, side-by-side, helping them organize their own ideas, opening community connections, taking them places, teaching things, serving as role models, and keeping the morale high.

In situations when adults are not present and schools are not able to provide children with the experiences that they need, community organizations have to compensate for the missing elements in the children's education and assume a more central role in helping them grow to become active and critical participants of society.

Unfortunately, youth organizations tend to be overwhelmed with different activities, are not necessarily prepared or empowered enough to do well what is expected from them and, to make things worst, lack appropriate tools for the job. As seen in chapter 4, the youth-led projects of the Young Activists Network became possible only after we recruited teams of volunteers to work close together with our community partners.

One way or another, as part of this thesis I did a little bit of everything: designed educational methodologies, organized volunteers, worked with community organizations, promoted youth projects, answered questions, documented the process and implemented new tools. However, even counting support from volunteers and staff from partner organizations, those efforts were still very limited in time and extent as compared to what needs to be done.

In my opinion, the successful implementation of technological initiatives for social empowerment requires the creation of a special kind of organization to compensate for existing challenges and seek new alternatives for the methods and technologies used.

Such an organization should not try to enforce any specific approach or replace existing initiatives by new ones. Quite the contrary: it should serve mainly as a reference point for best practices and source of incentive and resources for other organizations to implement socially empowering initiatives based on their own interests and the

recognition of their value. Rather than fostering a philanthropic or dependency-based relationship, the new organization should create conditions for interested groups to take only the pieces they need, receive support in things they cannot do by themselves, and give feedback on what is missing or needs to be improved. This way, partner organizations are more likely to feel in control and assume ownership over the project.

In particular, I believe the ideal organization should consist of at least:

- An education team to formalize lessons learned from the field, prepare support materials, and do assessment and evaluations;

- An outreach team that recruits volunteers, works with groups and organizations, and organizes events to mobilize the community at large;

- A technical team that implements appropriate technologies to facilitate the work of the other teams;

- A fund raising team to obtain the necessary resources to maintain the organization itself and support community partners in the implementation of the initiative.

Among other things, the new organization should be able to guarantee the long-term commitment that is required to the implementation of community development projects and facilitate opportunities for the testing of new ideas. In the case of this thesis, even though I could count on community connections that MIT already had with the organizations that I ended up working with, I still had to spend a lot of effort strengthening those connections and preparing the terrain for my design experiments. Moreover, even though the PhD program allows 4 years to the development of the research, design experiments in community settings tend to take a long time and there is only so much that can be done within that time frame. That not only may force the research to stop at a less-than-ideal time, but may also lead to some unfulfilled expectations by community partners regarding the continuation of the activities. The situation would be very different if new projects were part of a larger initiative that facilitated their start and managed their longer-term sustainability.

Although individual student projects are somewhat constrained, I believe universities can and should play an important part in the implementation of technological initiatives for social empowerment. Among other things, socially empowering projects require a combination of different disciplines that may go from technology development to impact assessment, and should rely on institutions that are non-profit oriented.

In an interesting mutually empowering way, at the same time that students may bring enthusiasm and skills to the initiative, the initiative may provide them with a meaningful context to apply what they learned and strengthen core human values that they will carry with them through their career and family lives. That is what happened to me as part of my experience at MIT, and that is the kind of thing that I would love to see happening more often here and in other places as well.

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