


CIUDADANÍA CON SENTIDO: APPROPRIATION OF ICT FOR CITIZEN EDUCATION

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Abstract

This article presents the research experience of Ciudadanía con Sentido [Citizenship with Meaning] from the construction of: community social networks of citizen initiatives for the construction of a culture of peace; an education proposal for the appropriation of information and communication technologies (ICT); and a strategy for the development of a digital platform from a social perspective. The context in which the experience is developed is presented in sociopolitical and theoretical terms; then the methodological strategy with different population groups in Medellín is described and, finally, the results in terms of a proposal that involves the development of a digital platform from a social perspective of education for the appropriation of technologies and the construction of citizen initiatives in vulnerable communities are shown.

DIGITAL DIVIDE • CAPACITY BUILDING • CITIZEN EDUCATION • INFORMATION AND COMMUNICATION TECHNOLOGIES

CIUDADANÍA CON SENTIDO: APROPIACIÓN DE TIC PARA LA FORMACIÓN CIUDADANA

Resumen

El artículo presenta la experiencia investigativa de Ciudadanía con Sentido desde la construcción de: redes sociales comunitarias de iniciativas ciudadanas para la construcción de la cultura de paz; propuesta de formación para la apropiación de tecnologías de información y comunicación (TIC) y estrategia para el desarrollo de una plataforma digital desde una perspectiva social. Se presenta el contexto en el que se desarrolla la experiencia, en términos socio-políticos y teóricos; luego se describe la estrategia metodológica con diferentes grupos poblacionales de Medellín y, por último, los resultados en clave de una propuesta que articula el desarrollo de una plataforma digital desde una perspectiva social de formación para la apropiación de tecnologías y la construcción de iniciativas ciudadanas en comunidades vulnerables.

BRECHA DIGITAL • CREACIÓN DE CAPACIDADES • FORMACIÓN CIUDADANA • TECNOLOGÍAS DE LA INFORMACIÓN Y LA COMUNICACIÓN

CIUDADANÍA CON SENTIDO: APROPRIAÇÃO DAS TIC PARA A EDUCAÇÃO PARA A CIDADANIA

Resumo

O artigo apresenta a experiência investigativa de Ciudadanía con Sentido [Cidadania Significativa] a partir da construção de: redes sociais comunitárias de iniciativas cidadãs para a construção da cultura da paz; proposta de formação para a apropriação de tecnologias de informação e comunicação (TIC) e estratégia para o desenvolvimento de uma plataforma digital de uma perspectiva social. Apresenta-se o contexto no qual é desenvolvida a experiência, em termos sociopolíticos e teóricos; logo após descreve-se a estratégia metodológica com diversos grupos de população de Medellín e, por fim, apresentam-se os principais resultados de uma proposta que articula o desenvolvimento de uma plataforma digital de uma perspectiva social de formação para a apropriação de tecnologias e a construção de iniciativas cidadãs em comunidades vulneráveis.

BRECHA DIGITAL • CRIAÇÃO DE CAPACIDADES • FORMAÇÃO CIDADÃ • TECNOLOGIAS DA INFORMAÇÃO E DA COMUNICAÇÃO

CIUDADANÍA CON SENTIDO: L'APPROPRIATION DES TIC EN VUE DE L'ÉDUCATION POUR LA CITOYENNETÉ

Résumé

Cet article présente l'expérience d'enquête de Ciudadanía con Sentido [Citoyenneté Significative] à partir de la construction: de réseaux sociaux communautaires d'initiatives citoyennes pour la construction de la culture de la paix; de la proposition d'une formation pour l'appropriation des technologies de l'information et de la communication (TIC); et d'une stratégie en vue du développement, d'une plateforme digitale avec une approche sociale. On présente, en termes sociopolitiques et théoriques, le cadre où se déroule l'expérience; ensuite on décrit la stratégie méthodologique adoptée auprès de différents groupes démographiques de Medellín; et à la fin les résultats en tant que proposition articulant le développement d'une plateforme digitale d'une perspective sociale pour l'appropriation des technologies et la construction d'initiatives citoyennes dans des communautés vulnérables.

BRÈCHE DIGITALE • CRÉATION DE CAPACITÉS • FORMATION CITOYENNE • TECHNOLOGIE DE L'INFORMATION ET DE LA COMMUNICATION

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INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT) ARE ALREADY PART OF OUR collective narratives. What some authors predicted more than 20 years ago is already evident: the Internet has caused a displacement of strong and constant institutional relationships; links are becoming more and more flexible due to the deregulation of social practices and globalization; which has seen the emergence of social networks, of individual and collective actors, with a privileged horizontal coordination (Castells, 2001, 1997; Giddens, 1991; Lévy, 2001; Wellman & Haythornthwaite, 2002).

With the expansion and flexibility of the public space through technological mediation, other types of agency, other types of formats for expression (diversity of languages), another perception of time, and another development of competencies and other forms of socialization have emerged, which have witnessed the rise of new citizenships (Castells, 2015, 2001; Robles, 2011; Svensson, 2011). As for the impact on democracy, the transformation of the public sphere through technological mediation influences the development of information, expression, association, and deliberation capacities of citizens (Beam et al., 2018; Hoffman, 2009; Lévy, 2013; Mossberger et al., 2007; Tremblay, 2006).

But precisely this importance and centrality of ICT and the Internet in the contemporary world has also led to marginalization and exclusion (Castells, 2001; Cobo, 2019; Chen & Wellman, 2003; Lévy, 2001; Pajnik, 2005; Deursen & Dijk, 2014; Dijk, 2005; Wessels, 2013). Indeed, at the same time that new forms of citizenship appear through technological mediation, emerging forms of inequality arise in the social sphere (Hoffmann, 2009; Ragnedda & Muschert, 2013) that have a direct impact on the full exercise of citizenship.

This general framework contains the experience of *Ciudadanía con Sentido* [Citizenship with Meaning], derived from several research projects (Figure 1), with an interest in longitudinal observation of the digital divide as a multidimensional problem (Chen & Wellman, 2003; Helsper, 2012; Mossberger et al., 2007; Tsatsou, 2011), where cognitive, affective, and cultural aspects are directly involved in the forms of use and social appropriation of ICT for the exercise of citizenship (Proulx, 2015, 2009). This article reports on this experience developed over ten years, within the framework of the inter-institutional alliance *Creando Paz: Escuela Itinerante* for the construction of a culture of peace in Medellín (Colombia). *Creando Paz* is an inter-institutional alliance for peace education, made up of social, academic, and governmental organizations, founded with the aim of systematically contributing to the construction of a culture of peace.

To this end, we first present the context, both in sociopolitical and theoretical terms, in which the experience arises and develops; then we describe the methodological strategy of the research carried out with different population groups in the city of Medellín and, finally, we present the findings and results in terms of a proposal that involves the development of a digital platform from a social perspective with education for the appropriation of ICT and the construction of citizen initiatives in vulnerable communities.

Background and context

In Colombia, violence operates as an oracle. The great questions of society are formulated on the basis of violence. . . . The dyad of violence and peace has become the most emblematic theme of historiography and contemporary national urban and rural sociology. (Martin, 2019, p. 344, own translation).

Medellín is perhaps, at the national level, the city that most embodies this statement. In 1991, it was the most violent city in the world, with 6,810 people murdered. “Paramilitaries, guerrillas,

drug traffickers, and State agents have deployed a macabre repertoire of violence in this city that explains not only the high number of direct victims but also the preponderance of this violence in the collective memory” (Centro Nacional de Memoria Histórica, 2017, p. 518, own translation). However, since 2015, Medellín ceased to appear in the list of the most violent cities in the world (Valenzuela, 2016).

The municipality of Medellín went from being an unviable city in the years 1980-1990 (Centro Nacional de Memoria Histórica, 2017; Martin, 2014) to being elected in 2013, by the Urban Land Institute of Washington, and in 2017, by the Australian innovation agency 2ThinkNow, as the most innovative city in the world, and in 2019, the Center for the Fourth Industrial Revolution in Latin America.

This transformation is largely due to civil society, to initiatives of third sector organizations – NGOs, Foundations, Cooperatives – of artistic and community collectives (Centro Nacional de Memoria Histórica, 2017; Martin, 2014; Martin & Corrales, 2009). This is, a “civil society third sector” (Giraldo-Ramírez, 2016) that laid the groundwork for the municipal government to initiate, starting in 2004, an exercise of urban innovation, transparent public management, and social inclusion that became known as the Modelo Medellín [Medellín Model] (Martin & Corrales, 2009).

Medellín Digital

The Medellín Digital Program was part of this city model. In 2007, the Program was created (Concejo de Medellín, 2008) with emphasis on three fields: education, entrepreneurship, and government, and with two basic strategies: connectivity and appropriation. This program was continued through the strategies Medellín Ciudad Inteligente [Medellín, a Smart City] (2012-2015) and Medellín Digital para vos [Digital Medellín for you] (2016-2019). The main beneficiaries of the Medellín Digital program were teachers and students, entrepreneurs and business people, and the general community (including the population not included in the previous groups, such as housewives, retirees, etc.). The first and second phases of a research we conducted on the impact of the education programs of the Medellín Digital Program showed that the population the least impacted by the strategies was the general community (Álvarez Cadavid et al., 2011; Giraldo-Ramírez & Patiño-Lemos, 2009). This was more than paradoxical, since at the time, the public connectivity and digital literacy strategies were more oriented to the population in conditions of socioeconomic vulnerability.

This raised several questions regarding digital inclusion strategies that did not necessarily mean social inclusion (Buré, 2006). What happened, then, with the other dimensions of the digital divide: cognitive, affective, and cultural? This is where education has a preponderant role to play in bridging the digital divide (Echeverría, 2008; Mossberger et al., 2007), not only in terms of connectivity and access, but also in terms of the development of relevant skills for citizenship (Nah & Yamamoto, 2018). Among the three dimensions proposed by the World Bank for poverty reduction and economic growth is building the capacity to access global knowledge and to adapt it to local use (World Bank, 2002, p. 4). To this end, ICT play an important role as a force for change in education.

The digital divide as seen from the capabilities approach

More and more academic works are found on the potential of Amartya Sen’s human capabilities approach applied to ICT discussions (Bezuidenhout et al., 2017; Coeckelbergh, 2011; Coelho et al., 2015; Gigler, 2015; Kleine, 2010; Oosterlaken & Hoven, 2011; Thomas & Parayil, 2008; Tsatsou, 2011; Zheng, 2009). The case of Ciudadanía con Sentido presents the human

capabilities approach as an alternative to address the problems of the digital divide through education for the appropriation of ICT in vulnerable communities. This requires a broader view of the digital divide and digital inclusion, a multidimensional view, not focused exclusively on infrastructure, applications, and services, but also on the cognitive, affective, and cultural aspects that cross the practices of use or non-use of ICT.

Amartya Sen's (1993, 1998) capabilities approach considers that development does not mean that all human beings achieve the same levels of (mental) satisfaction, that they have the same level of primary goods or the same basic needs satisfied; but that all individuals have the same possibility of expanding their capabilities to achieve the most valuable type of life for each one. The plurality of capabilities, needs, freedoms, opportunities or functioning denotes the urgency of adjusting to human diversity (Sen, 1995). Hence, the human capabilities approach places the issue of social freedoms and opportunities at the center.

The relation between individual freedom and the achievement of social development goes well beyond the constitutive connection, important as it is. What people can positively achieve is influenced by economic opportunities, political liberties, social powers, and the enabling conditions of good health, basic education, and the encouragement and cultivation of initiatives. The institutional arrangements for these opportunities are also influenced by the exercise of people's freedoms, through the liberty to participate in social choice and in the making of public decisions that impel the progress of these opportunities. (Sen, 2000, p. 21, own translation).

Now, how do I judge what is valuable to me, what provides me with well-being and quality of life? Amartya Sen refers to functionings, which some authors translate as realizations or, more generically, skills. Functionings refer to the "doings and beings" of the person. Accordingly, the person's quality of life will depend on his or her capacity to achieve valuable functionings in particular contexts. There are, then, elementary functionings related to food, health, housing, etc.; and there are complex functionings such as achieving self-dignity and social integration. "Capability is thus a kind of freedom: the substantive freedom to achieve alternative functioning combinations (or, in less formally put, the freedom to achieve various lifestyles)" (Sen, 2000, p. 100, own translation).

From this perspective, we ask ourselves how to value the processes of digital inclusion in contexts where living conditions need to focus on elementary functionings? How to move from elementary to complex functionings? This tension is clearly described by Natalia Volkow (2003, p. 1, own translation), in the key of an integrative reading of the so-called digital divide:

It is precisely this last concept that deserves special attention, due to the efforts that different governments are undertaking to reduce the so-called "digital divide". These efforts involve the expenditure of resources, which are always scarce and therefore carry a very high opportunity cost, as they compete with the attention to many other social and economic needs of the population. The aim is not to argue that governments should not invest in ICT until they have resolved the basic needs of the population, but to analyze what elements are required for these investments in developing countries to produce significant benefits in the quality of life of the population and not just serve to modify an indicator.

In this sense, digital inclusion policies that have focused on what is known as the first-level digital divide (Deursen & Dijk, 2019; Deursen & Helsper, 2015), that is, guaranteeing public connectivity and access in communities in vulnerable conditions, could be considered policies of unequal inclusion, as they neglect elements of various kinds that constitute natural or artificial

barriers to well-being (Gigler, 2015; Sen, 1993), most of them associated with social development, which hinder effective access to technology.

For example, topography in a city like Medellín is a determining factor, a natural barrier with which the inhabitants of the poorest sectors in particular have to deal. Territorial segregation and Medellín's occupational model deepen the economic and political inequality that already exists between social classes.

The dynamics of urbanization [of Medellín], as it grows in intensity, begins to create a profound physical, social, and economic segregation in the city. Towards the north and the upper parts of the eastern and western slopes, the informal city is located, where the poor of the unconsolidated city find shelter. (Echeverri & Orsini, 2011, p. 15, own translation).

Despite the efforts of the local government to expand digital coverage, most public connectivity strategies have not had the expected impact in the most peripheral neighborhoods of the city, either because of the cost of travel (you have to take the bus to go to Parque Biblioteca, one of the strategies to expand public connectivity in the city) or because travel is impossible because of the so-called "fronteras invisibles" [invisible borders] (López-López et al., 2014; Ruiz & Vélez, 2004). These borders are lines demarcated by violent actors in the also called "comunas populares" [popular communes], mostly integrated by peripheral neighborhoods located in the mountains surrounding the city valley, with higher poverty rates (Centro Nacional de Memoria Histórica, 2017), where the struggle for territorial control and the illegal trafficking business restrict the free passage of its inhabitants.

In the first case, that of mountainous topography, added to territorial segregation, there is an unequal inclusion. Although there is a general solution of connectivity and access for an entire commune, this does not address the reality of the inhabitants of peripheral neighborhoods. Many of them live in informal settlements and in conditions of forced displacement, therefore, they may not have the economic resources to move to the free internet rooms; this, of course, when there is access to transportation service. In the second case, that of invisible borders, the problem is exclusion, clearly. The inhabitants of the communities are deprived of fundamental freedoms: free movement in the territory and, in many cases, life itself. To solve both problems, profound social measures are needed, focused on guaranteeing security, job opportunities, basic public services, etc.

This is also associated with other factors that deepen the gap: these same people are generally affected by poverty and illiteracy. Hence, the need for a comprehensive and multidimensional vision of the digital divide and digital inclusion processes that recognizes, in addition to exclusion due to the deprivation of fundamental freedoms, inclusion under unfavorable or unequal conditions. This perspective requires placing human capacity at the center and invites us to rethink the prevailing models of development: without social development there can be no sustained economic development. The indicator can help in a management report, but it does not save from meaninglessness.

Ciudadanía con Sentido: Education proposal for the appropriation of ICT

Based on this frame of reference, we worked on a education proposal for the appropriation of ICT from the human capabilities approach (Sen, 1993, 1998) that would make it possible to go beyond the literacy processes focused on productive and labor competencies derived from public policy, to focus on the interests, expectations, and particular needs of individuals; that is, on the type of life that they value and have reason to value. Thus, we identified the participatory budget strategy as the ideal one to work from this approach, since it constitutes a mechanism of citizen participation, of direct and voluntary intervention to influence the use of economic resources designated to local governments with the idea of promoting equity and democracy.

In our view, the participatory budget model contemplates, in its essence, at least three key elements of the human capabilities approach: 1) as a tool for democratic deliberation, it considers the agent nature of human beings; 2) as citizens contribute to local development decision-making, it considers their ability to live the kind of life they value for themselves; and 3) as a process open to any citizen who wants to participate, it considers the role of the state in expanding opportunities to expand, in turn, the human capabilities for participation. Hence, participatory budget proposals that made a specific requirement in citizen education and ICT literacy were chosen as important elements for the development of their communities. (Giraldo-Ramírez et al., 2017, p. 7012, own translation).

The participatory budget strategy in Medellín generates modalities of participatory and emergent citizenship, based on the social capital existing in the communities. Beyond the controversies raised in recent years about the concept of social capital, many authors (Durston, 2000; Lechner, 2000; Lévy, 2007) recognize its importance in promoting an effectively participatory and deliberative citizenship, which contributes to social inclusion and favors democratic participation processes (Arboleda Álvarez et al., 2008).

In accordance with the above, the initiatives that included a specific requirement in citizen education and ICT literacy were chosen as important elements for the development of their communities. Thus, the starting point is the recognition of the individuals and their contexts of action to develop experiences that allow participants to appropriate technological tools according to their specific capabilities, needs, and interests, to enhance the construction of citizenship initiatives. But what kind of citizenship are we talking about?

Based on Norbert Lechner (2000), we distinguish three ways of understanding citizenship: an instrumental citizenship, detached from politics and focused on efficient management for problem-solving, that is, a citizenship that disbelieves in politics but trusts in administration; an institutional citizenship, characterized by the centrality of the traditional political system as the only regulator and conductor of social life; and finally, the concept of citizenship as a social bond, where social capital becomes relevant as a driver of collective action by the citizens themselves.

It is in the third category that we frame the concept of emerging citizenships and where we find, like Durston (2000), a key to the construction of democracy. From this point of view, the social bond is seen as a potential resource for increasing social capital; thus, social capital can effectively be learned in formal associations with a clearly established social bond: “That is, social capital would be a capacity that, once learned, can be activated in various areas” (Lechner, 2000, p. 19, own translation).

The above allows us to think of the notion of social capital from the perspective of the capabilities approach, as a complex functioning that allows the individual to integrate socially, to create social bonds. As stated by Norbert Lechner (2000), the lack of social networks is also an indicator of poverty, so that building social capital is a great challenge in places subjected to adverse circumstances such as those described above. Hence, the participatory budget strategy is an opportunity to create bonds and generate opportunities for collective action.

Therefore, in the words of Lechner (2000, p. 30, own translation) “social capital – as a specific constellation of the social bond in order to promote collective action” cannot be seen as a stock, something that has existed formally for centuries, almost immutable, but as a flow subject to change: “The transformation of social capital would be driven by the dynamics of individualization and the definition of collective identities that can be observed everywhere” (2000, p. 31, own translation).

Methodology

The research and development process has a qualitative approach where various participatory research techniques are used. In this type of research actors (groups, community leaders, social organizations, etc.) are involved in the processes of reflection, ideation, and construction: through the dialogue between knowledge, co-creation processes are carried out. In these processes, the experience of the individuals is capitalized, from which the roles are assumed and exchanged in the education spaces, either as experts or novices, or as peers in the creative and production processes. That is, the contents are not based on prescriptions or theories, but turn concrete experiences into initiatives for the construction of citizenship (Echeverri-Álvarez, et al., 2020).

Ciudadanía con Sentido has been consolidated through several research processes, considered as education pilots, since 2009 (Figure 1), based on the relationship between a variety of social groups, whose diverse characteristics and collective commitments to the construction of a city and citizenship add value to the process.

To select the actors for each pilot (398 participants), heterogeneous strategies were used. The first phase (2009-2011) considered the participatory budget proposals, selecting six proposals corresponding to Communes 1, 2, 7, 10, 12 and the district of Santa Elena. In these communes, a characterization and diagnosis of ICT use trends in the communities was made through a survey applied to 177 people. Based on the results, micro-curricula were designed for each of the proposals. Subsequently, a survey of these first education experiences was carried out to identify the 32 volunteer participants for the next pilot program.

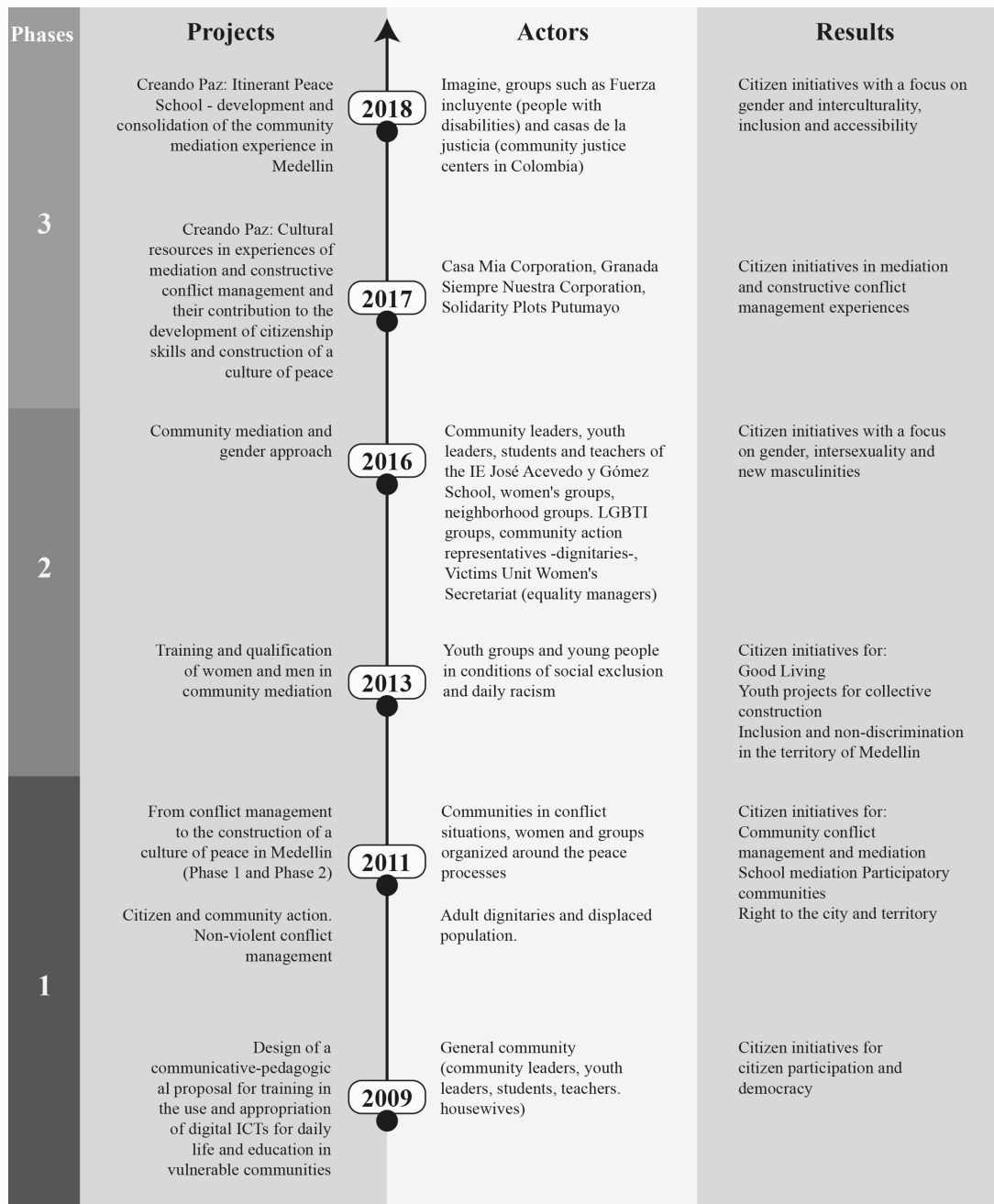
In the second phase (2012-2016), to select actors, we appealed to the knowledge of the social organizations that are part of the Alianza Interinstitucional Creando Paz about the community processes of various groups that focus their efforts on the peaceful management of conflicts and the construction of a culture of peace. Purposive sampling of the actors based on their characteristics was used, with a participation of 119 people. Each individual and group is a co-participant, as they contribute to the foundation, consolidation, and sustainability of the proposal through processes of dialogue, trust, and bonds that are woven among them based on consistent work; all this oriented to the validation process of the methodology and the education proposal for the appropriation of ICT.

In the third and last phase (2017-2019) the pilots were formed. One of them was created at the request of some organizations and groups that had participated in the previous processes for the education of other actors. The other emerged by direct invitation of the Alianza Interinstitucional Creando Paz to groups and organizations with peacebuilding experiences in territories affected by the armed conflict. A total of 70 people participated in the pilots of this phase.

Taking into account the collaborative nature of the process and the nature of the object of study, the same research techniques were not always used in the pilots. Although in the design of each project some techniques are proposed for data collection, in the fieldwork it is necessary to use instruments adjusted to each reality. Therefore, as deemed necessary and relevant, narrative techniques, open and semi-structured interviews, participant and non-participant observation, surveys, documentary analysis, among others, have been implemented.

In the research process, a methodological strategy is consolidated that links education in the appropriation of ICT to the construction of citizen initiatives and new forms of citizenship in digital environments, with the design and implementation of the digital platform called Ciudadanía con Sentido.

Figure 1
Pilot-project timeline



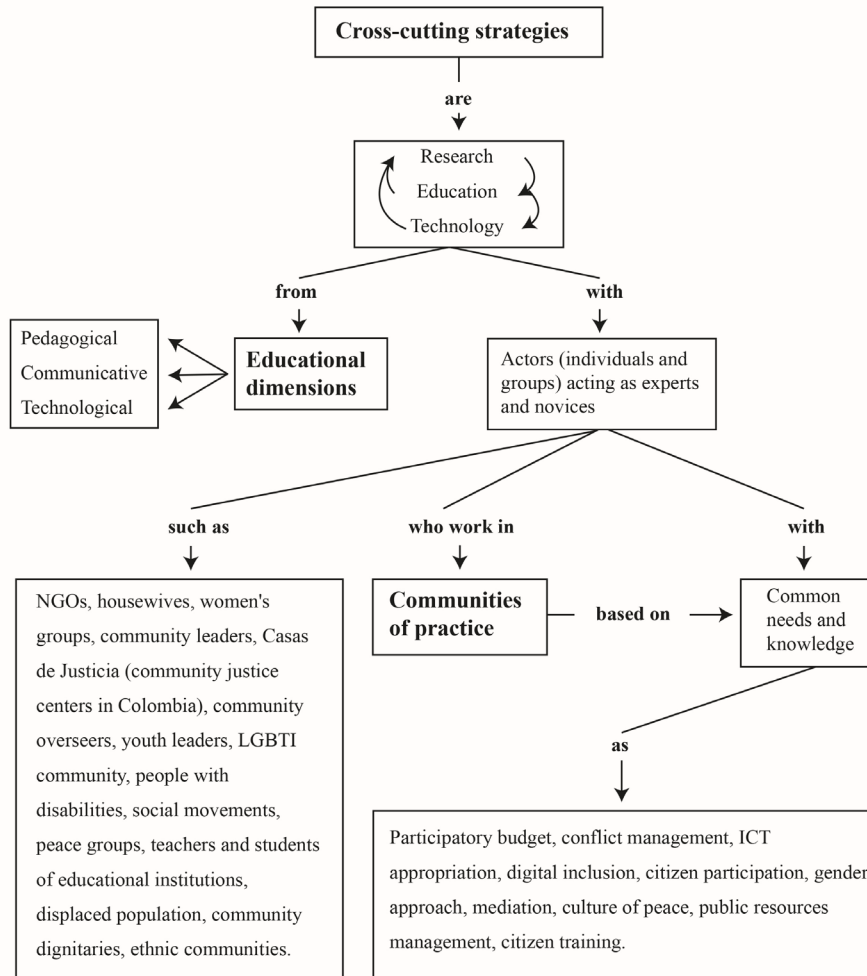
Source: Authors' elaboration.

Results

As a result of the research, a education process for the appropriation of ICT was consolidated, oriented towards the construction of citizen initiatives in hybrid physical-digital environments, which materialized in the design and implementation of the digital platform Ciudadanía con Sentido. The result of this process takes the form of three cross-cutting strategies and three education dimensions for the appropriation of ICT (Figure 2).

Figure 2

Strategy and dimensions for the development of a digital platform from a social perspective



Source: Authors' elaboration.

Cross-cutting strategies for ICT appropriation

The cross-cutting strategies described below support the research process and allow integrating the education processes to the development of the digital platform.

Research strategy

The *research workshop* was consolidated as a permanent meeting space for researchers who are part of the studies associated with the different projects that have strengthened the proposal (see Figure 1). It is also characterized by the interdisciplinary dialogue to reflect and problematize the relationship between the use of technology by the different actors (individuals and groups) in social practices that are significant for them. During the years in which the proposal is worked, the meetings allow the researchers to address the topics of each project linked to the processes of appropriation of ICT, to build and consolidate a theoretical reflection on which the proposal of *Ciudadanía con Sentido* is based.

Education strategy

Based on the human capabilities approach, a *education strategy* was developed to address the diversity of actors (individuals and groups), with common interests oriented to the construction of

city and citizenship. Thus, *communities of practice* emerged as spaces for learning and co-creation. The education strategy combines both physical and digital spaces and identifies the needs and knowledge of the actors so that there is a minimum of limitations in the education processes. The proposal is characterized by: a) generating recursive relationships between actors; b) addressing asymmetries in terms of human competencies and capabilities, c) moving from vertical and hierarchical relationships to relationships between peers with differentiated strengths, and d) permanently exchanging roles from experts to novices and from novices to experts.

Technological strategy

The development of the digital platform Ciudadanía con Sentido was a consequence of the creation of collaborative networks, originated in the *communities of practice*, for the construction of citizen initiatives. For this purpose, agile methodologies were favored, which allow to continuously and gradually build a functional product that is constantly fed back with the intervention of the participants, in this case in the *communities of practice* and in the *research workshop*. The purpose of the technological strategy was: a) to prioritize the interaction of people over documentation and processes; b) to consolidate the retrospective and feedback that allows team members, through reflection, to adapt to change, evaluate errors, and preserve successful practices; c) to promote values such as effective communication, teamwork, trust generation, which are fundamental to build citizen initiatives.

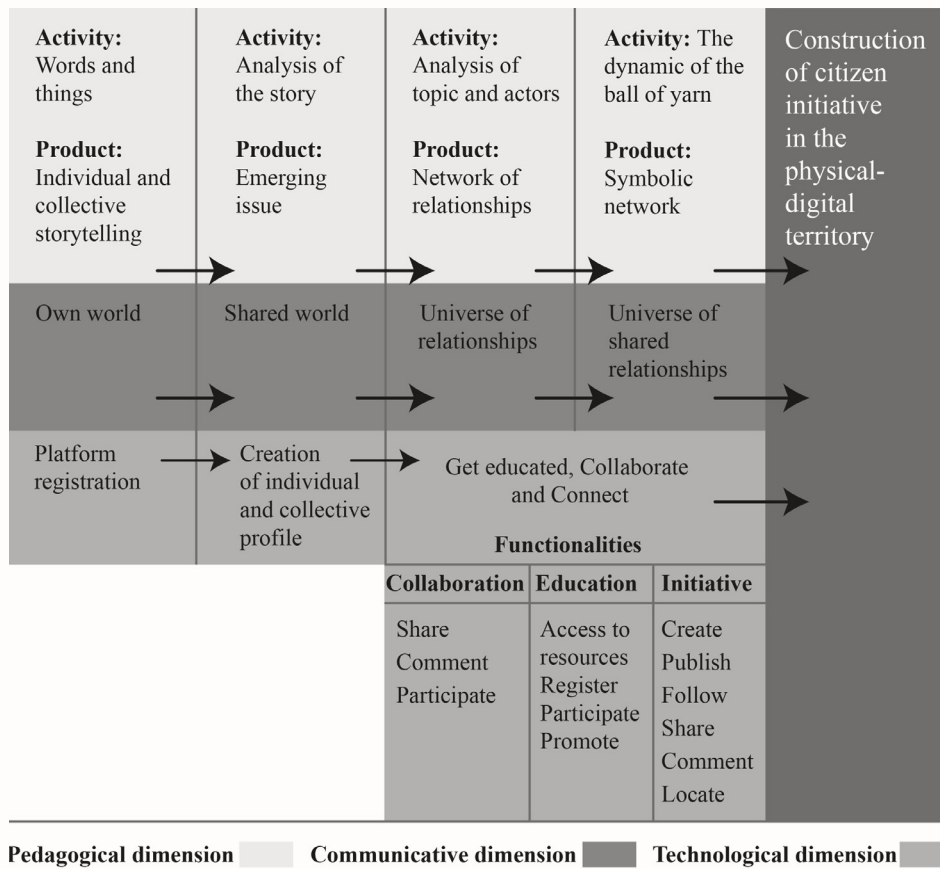
Education dimensions for the appropriation of ICT

Taking into account the dynamics of the *communities of practice*, individual and collective participation processes were carried out, in which common interests were shared and discussed, in order to build horizontal relationships among the participants. Therefore, the experiences and practices of the actors are the input to generate shared knowledge through interactions and pedagogical and technological mediations that address their concerns, needs, roles, and initiatives.

The above is the basis for the education dimensions of the *cross-cutting strategies of ICT appropriation* that addresses two principles: the first, to recognize the particularities of the different individuals and groups with which we relate, identifying their own knowledge and subjectivities, to develop a education strategy that allows participants to appropriate the technological tools according to their specific capabilities and needs. Second, there are not, strictly speaking, right or wrong uses of technology; there are socially situated uses, which arise from the needs, interests, and expectations of individuals and groups; therefore, they are socially negotiated uses (Giraldo-Ramírez, 2015). This implies that the education proposal has some minimum requirements, both from a technological and pedagogical and didactic point of view.

The following is a description of each of the dimensions that consolidate the dynamics of the education process for the construction and dissemination of citizen initiatives in the physical-digital territory. These are oriented towards the construction of a culture of peace and the recognition of collaboration, union, and solidarity networks that strengthen such initiatives (Figure 3).

Figure 3
Structure of *Ciudadanía con Sentido*



Source: Authors' elaboration.

Pedagogical dimension

This dimension is based on a series of activities whose purpose is for the actors who are part of the communities of practice to reflexively initiate the process for the construction and subsequent dissemination of citizen initiatives. The purpose of the activities is the construction of several products that account for a trajectory that starts from intrasubjectivity (one's own world) to intersubjectivity (shared world and universe of relationships).

To this end, the first activity involves the construction of an individual story through the dynamic "Words and things" in which participants, through their affinity for one of these linguistic or symbolic forms, tell the story of their condition as a person linked to social, educational, and community work. The following activities are linked through the dynamic "The ball of yarn". Starting from the first story, a series of activities are connected with analysis matrices accompanied by a socialization that allows the construction of emerging collective stories and networks of relationships with the other participants. These links will support the citizen initiative, which will then be shared in the community social network *Ciudadanía con Sentido*.

Communicative dimension

The communicative dimension establishes four milestones that are formed with each of the activities of the pedagogical dimension. The milestones are: 1) Own world, in which each of the actors share a life experience referring to their personal world in an individual story; 2) Shared world, in which the actors identify themes that allow them to group together to build a collective

story that materializes in this milestone; 3) Universe of relationships, in which a common social and community problem emerges; and, finally, 4) Shared universe of relationships, in which participants analyze what type of actors and scenarios are related to the emerging problem, identifying links through the weaving of a symbolic network of relationships (personal, institutional, community, etc.), which allows them to build their citizen initiative. The communicative dimension continues the intrasubjective-intersubjective trajectories, as a strategy for the construction and dissemination of citizen initiatives in the physical-digital territory.

Technological dimension

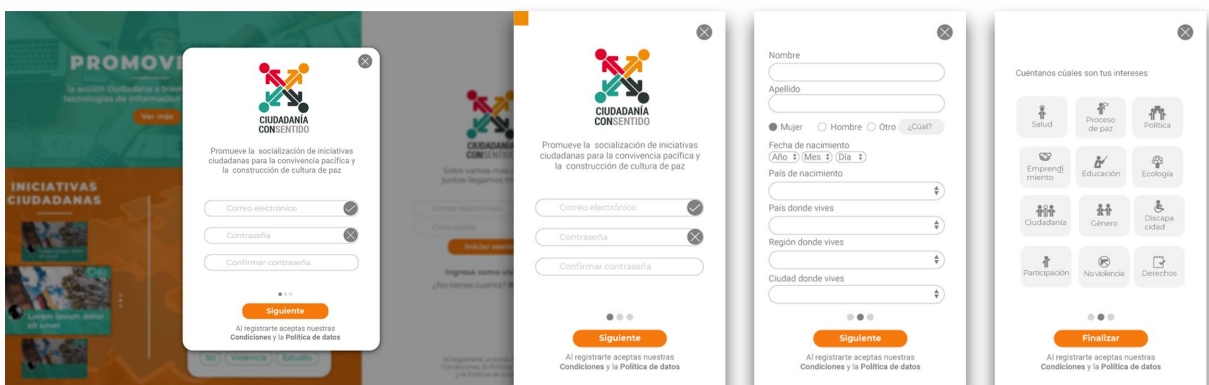
This last dimension determines the functionalities and designs the interactions in the digital platform Ciudadanía con Sentido. In this process, as in the other two dimensions, the intrasubjective and intersubjective trajectories are made viable.

Based on the exercise of reflexivity and construction of the Mundo Propio [Own World] milestone, the user registration module is developed on the platform, whose purpose is to participate and share interests related to the culture of peace that allow the platform to recommend initiatives that are in line with these interests (Figure 4).

The profile module is developed from the Mundo Compartido [Shared World] milestone, composed of three interfaces with different purposes: 1) to disclose who each user is; 2) to create and share the group in which the user participates or leads, if applicable; and 3) to group in a one place the initiatives of interest (Figure 5).

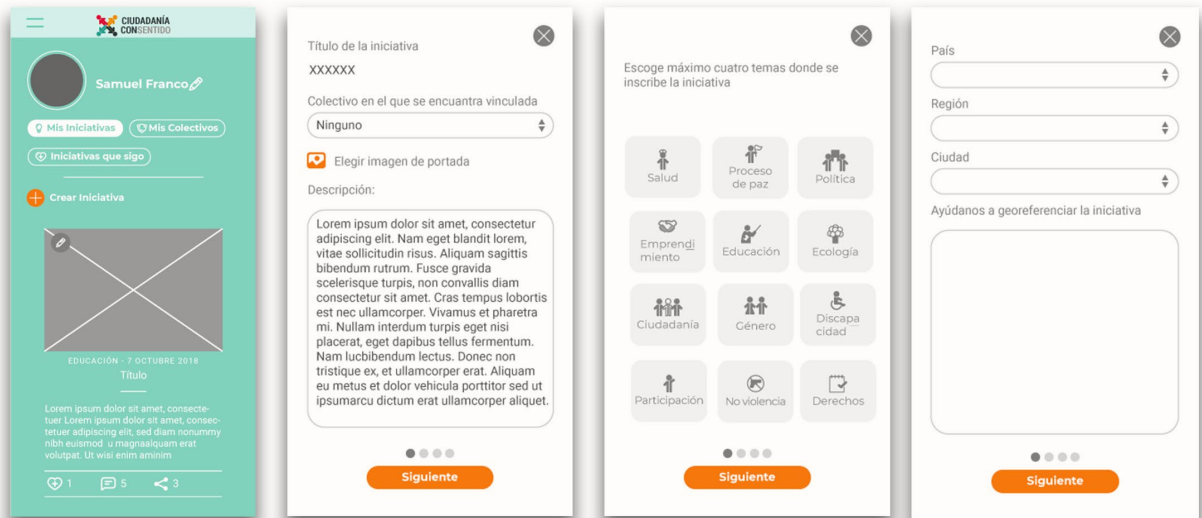
Based on the Universe of relationships and Shared Universe of relationships milestones, three modules are developed: Fórmate [Get educated], Colabora [Collaborate] and Conéctate [Connect], which are interrelated to contribute to a better user experience. The Fórmate module connects the user with a series of online courses for education topics related to the culture of peace. The Colabora module focuses on citizen initiatives, allowing you to create, manage, search, and follow other initiatives. And the Conéctate module uses the metaphor of network and territory to develop a series of filters that allow users to identify initiatives in different parts of the world (Figure 6).

Figure 4
Graphical interfaces of the register



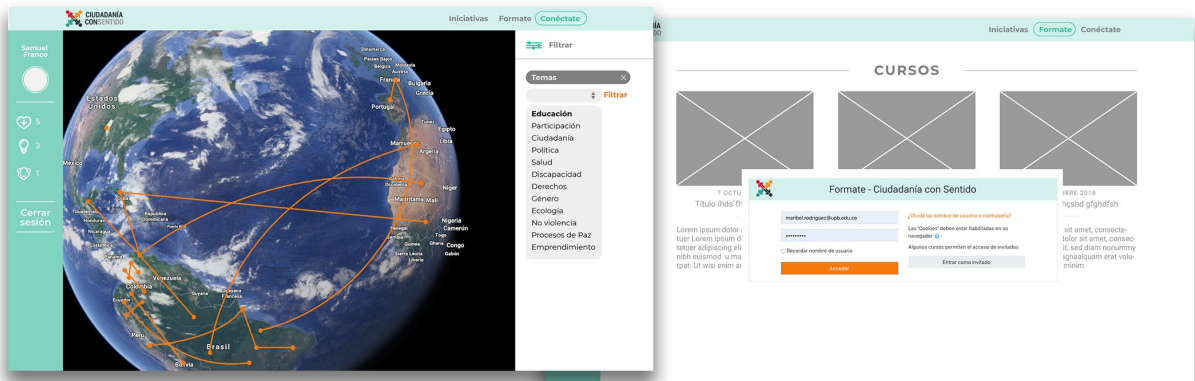
Source: Authors' elaboration.

Figure 5
Graphical interfaces of the profile creation



Source: Authors' elaboration.

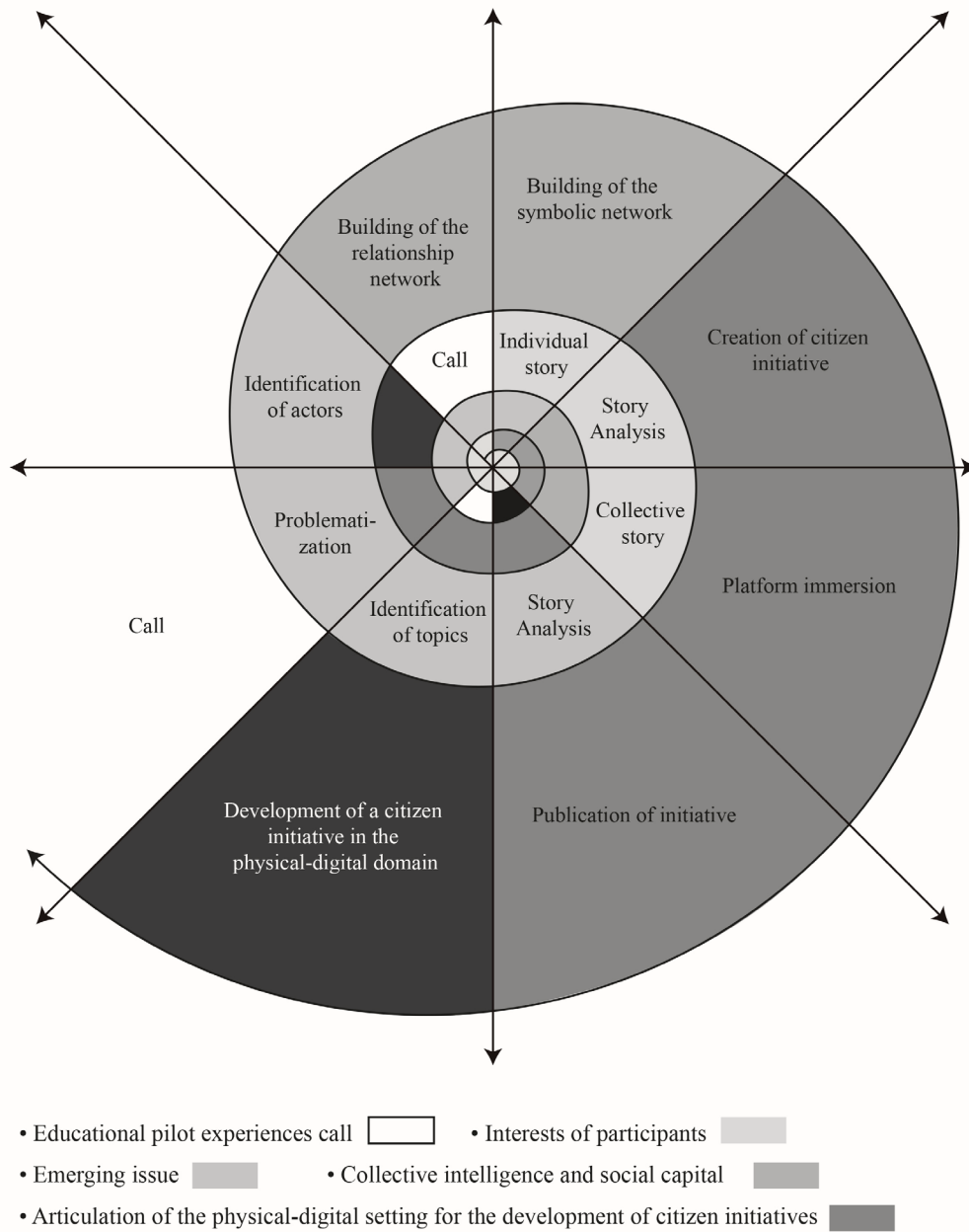
Figure 6
Graphical interfaces of *Fórmate* and *Conéctate*



Source: Authors' elaboration.

The work dynamics proposed in the proposal for education in the appropriation of ICT for Ciudadanía con Sentido has a systemic character, and is oriented to the amplification, in the digital territory, of the collective intelligence of the community social network from the communities in the physical territory (Figure 7).

Figure 7
Proposal for education in the appropriation of ICT



Source: Authors' elaboration.

Communities of practice

The following are the results of the communities of practice based on some of the testimonies collected during the pilots. Among them we find the voice of the various actors, most of them women, who also represent groups.

These testimonies highlight the relationship between experts and novices, which addresses their asymmetries in terms of knowledge and overcomes verticality in relationships with the permanent exchange of roles (testimonies 1, 2, 4 and 6). In these, the expertise and knowledge of the other is valued regardless of age, occupation, or role in society.

Actor: 1-FHS	Type: Individual	Age: 40-45	Gender: Male
Testimony 1			
<p><u>It was very special for me to see people of a very old and very young age</u>, with a civic consciousness, eager to contribute to society, to the construction of a new Medellín. For me, it was very rewarding.</p>			

Actor: 2-JQ	Type: Youth Group	Age: 18-20	Gender: Male
Testimony 2			
<p>Ciudadanía con Sentido, the workshops were really cool. They were over very fast because the ways of doing them were very dynamic. <u>For example, you could interact with children, very adult people, and young people like us</u>. So, you had a voice there, you could contribute.</p>			

Actor: 4-NJ	Type: Group of sons and daughters of the Mothers of La Candelaria	Age: 12-14	Gender: Female
Testimony 4			
<p>I helped people when they asked me for help. Afterwards, they themselves started to do. . .</p>			

Actor: 6-MNH	Type: Mothers of La Candelaria Group	Age: 50-55	Gender: Female
Testimony 6			
<p><u>My daughter helps me a lot to open my mail and to read the mails sent to me</u>.</p>			

The exchange of ideas and experiences allows the recognition of actors, both individually and collectively, which leads to the formation of networks that strengthen alliances and build social fabric (testimonies 10, 3, 5, 8 and 1). Participants find in others, allies that feed, support, and mobilize their initiatives through, among others, technological mediation, which is one of the ways to maintain and expand networks, connection, and interaction with others.

Actor: 10-MCR	Type: Group (Conciliadora en equidad. Mujeres Unidas Food Association)	Age: 55-60	Gender: Female
Testimony 10			
<p><u>I was very pleased with this project, why? Because it gave me a sense of who I am, where I come from, and where I am going and what I want to do. We learned what communications is, what it is for, how we can relate, how we can form a network, what world surrounds us, who we interact with, who we relate to. It was the first place where I learned how to interact in a network, with other organizations, other experiences, other projects.</u></p> <p><u>I have continued forming networks, which is what I learned the most and still keep here [points to head]. Why? Because if I interact with you [points to others], with you [points to others] . . . then the world expands more, I learn more, I interact with people, I know more about their needs, I can help them, and they can help me, because one gives and also receives.</u></p>			

Actor: 3-DLC	Type: Mothers of La Candelaria Group	Age: 40-45	Gender: Female
Testimony 3			
<p><u>In Ciudadanía con Sentido, as far as I remember, we made a network</u>, we were taught to turn on the computer and not to be afraid. We also learned that the network that we made, we could join it with another person, expanding it, and telling the problems of the communes and neighborhoods, or of the organizations.</p>			

Actor: 5-LDVH	Type: Group of sons and daughters of the Mothers of La Candelaria	Age: 20-25	Gender: Female
Testimony 5			
<p>... they taught us a lot about social networks and I found it very nice to build the social fabric and learn how to relate and interact with others, sharing ideas, and opinions.</p> <p>I think that the workshops of Ciudadanía con Sentido can be useful for the Corporation, as we continue weaving networks, such as the relationship we can have with other people, which can be useful for the emotional or psychosocial support for the victims of the armed conflict.</p>			

Actor: 8-BEV	Type: Group (Community leader)	Age: 50-55	Gender: Female
Testimony 8			
<p>What I liked the most about Ciudadanía con Sentido was <u>conviviality, sharing ideas, sharing projects of my colleagues</u>, because they were all people very committed to the community, very enthusiastic, very determined.</p> <p><u>The experience and the knowledge of this portal seems to me extremely important because from here, from home, I can share some initiative, which will be immediately fed back by my colleagues, who will give me I think it is wonderful because you are not alone, even if you are alone in front of the computer, next to you there are many people.</u></p>			

Actor: 1-FHS	Type: Individual	Age: 40-45	Gender: Male
Testimony 1			
<p>And now we know we could connect there in a network, and we are learning step by step what a network is, how we can contribute to it, to make ourselves known, to get to know the work of others. It has been an exchange of ideas, of experiences; and the experiences were very enriching. Ciudadanía con Sentido has given me more tools, more elements to enrich my pedagogical work.</p>			

Among the purposes of the project is the development of capacities and competencies in the use and appropriation of technology, but not exclusively from the technical point of view, which is learned during the process, but as a possibility to build a network of relationships that mainly contributes to the construction of a conscious and active citizenship (testimonies 7, 1, 2, and 9). In this way, the initiatives that are produced seek the transformation of social and community contexts and dynamics.

Actor: 7-ACV	Type: Group (Community leader)	Age: 30-35	Gender: Female
Testimony 7			
<p>For me, the experience of Ciudadanía con Sentido was very positive, <u>because the theme of technologies was used more as a theme focused on changing the dynamics of the community context. . .</u></p> <p><u>The experience was great because I was able to learn more about how to use the Internet and social networks in a more educational and creative way.</u></p> <p><u>The portal that is being built is useful because it has a way of integrating social actors who have an interest in improving the conditions and quality of life of people in the city. It is reciprocal because I can know what is happening in another commune, how it is, what conditions it is in, and what projects are being carried out.</u></p>			

Actor: 1-FHS	Type: Individual	Age: 40-45	Gender: Male
Testimony 1			
<p>... now we see that this is a story that touches us, and that citizenship is connected with new technologies in a very relevant way because it is part of the formation of the citizen of the 21st century; in addition to citizenship, emotional, cognitive, and research skills, technological skills are part of this education process.</p>			

Actor: 2-JQ	Type: Youth Group	Age: 18-20	Gender: Male
Testimony 2			
<p>... they helped us to handle the media very well, which can be very useful, whether it is to get help from others. <u>Ciudadanía con Sentido is something more profound, better, it helps you to do many things, to reflect, to look at things from another point of view, etc.</u></p> <p><u>You can suddenly share your idea on the Ciudadanía con Sentido portal, and you can get more voices, more people to join the cause, so it is very useful.</u></p>			

Actor: 9-CM	Type: Group (Community leader)	Age: 50-55	Gender: Female
Testimony 9			
<p>... which is to take ICT as a humanized tool to make citizenship, and the name is perfect, not just any citizenship but <u>Ciudadanía con Sentido.</u></p> <p><u>A computer does not guarantee that I am going to build a network, it is what I have here [points to the heart] and here [points to the head] with meaning. Ciudadanía con Sentido is the perfect name.</u></p>			

Conclusions and discussion

Ciudadanía con Sentido is a means, not an end. The processes for the appropriation of ICT with the communities in the framework of citizenship building implied a constant revision of the education proposal, since each initiative required a review of the pedagogical, communicative, and technological aspects of the proposal. Hence, thinking about ICT appropriation in an education context implied thinking of it as mediation for the construction of citizen initiatives, oriented to the transformative management of conflicts as a contribution to a culture of peace that also sought to link the territories: the physical territory (public space of the communities) with the digital territory (public space and digital networks), for the mobilization of community social capital and, thus, to bring into play the collective intelligence of the communities that build city and citizenship.

The research itinerary carried out during 10 years, which has consolidated the Ciudadanía con Sentido proposal, allows reaffirming, on the one hand, the potentiality of this strategy for the place it gives to cooperation and collaboration in the construction of projects and solution of common problems, a particularly important issue when the participants of the education process have differences due to their origins (from peripheries and urban centers), differences in their academic education, and differences in their levels of technological appropriation, an issue that rather than an obstacle was a reason to found a solidary pedagogical practice.

On the other hand, it allows reaffirming the originality of an education proposal for the appropriation of ICT and citizenship practices based on the capabilities approach of Amartya Sen (1993, 1998, 2000), which allows transcending a utilitarian vision of development, which is the prevailing one in public policies, through digital literacy processes focused on productive and labor skills, to focus on the interests, expectations, and particular needs of the individuals; that is, on the type of life they value and have reason to value.

Following this approach, methodologically, the education process focuses more on the design of interactions than on the design of contents. This goes beyond the access to pre-established material and contents, it revalues the access to the collective intelligence of the actors involved in the process, that is, to their community social capital. This can only be achieved through cooperative and collaborative networking processes. The work logic is a logic of proximity and cognitive, affective, and cultural involvement that combines the physical territory and digital space through mediation and interaction processes.

Therefore, in the proposal of *Ciudadanía con Sentido*, it is clear that there are no right or wrong uses of ICT; there are socially situated uses, which occur in the context of needs, interests, and expectations of an individual or group, therefore, they are socially negotiated uses (Giraldo-Ramírez, 2015). Hence, one does not teach how to use technology, but rather learns in the relationship of use established by the individual, which is crossed by their own cultural resources (knowledge, interests, competencies, needs, etc.); and it is from there, from where differentiated uses or alternative proposals of use emerge within the framework of the same learning activity regarding an interest that is not precisely technological but, in this case, of citizen education.

The theoretical-practical reflection of *Ciudadanía con Sentido* understands that efforts in education for the appropriation of ICT are not only directed to work and productive life, which is what is commonly worked on in public policy, but are also oriented to education for the appropriation of technology as a form of inclusion in the different dimensions of social life. Therefore, the education processes are based on what the community wants and needs, that is, technology is learned and acquires meaning in particular learning situations in relation to their own interests, which means turning experiences into referents of meaning that guide the actions, that is, in an emerging purpose.

We find that the word *initiative* contains in its own definition many of the elements that constitute the conceptual, political, and pedagogical basis of *Ciudadanía con Sentido*: it initiates an action, constitutes a right to exercise that action, mobilizes groups for common interests, and is dynamic by nature. Along the same lines, we understand the concept of citizenship as a social bond, where social capital becomes relevant as a driving force for the collective action of the citizens themselves and a key to the construction of democracy (Durstun, 2000; Lechner, 2000; Sodr , 1998).

Ciudadanía con Sentido is a mediator for the socialization of citizen initiatives that contribute to the reduction of affective, cultural, and cognitive gaps (Giraldo-Ramírez & Pati o-Lemos, 2009; Giraldo-Ramírez, 2015). To this end, the proposal aims at the design of physical-digital hybrid environments that allow the recursive linking of information flows, forms of interaction, and acts of communication in the physical territory to enhance participation, collaboration, and learning in their communities through the digital territory.

The research challenges in this work were posed as challenges that required raising awareness and especially flexibility in the methodological decisions that had to be adjusted to reality, not the opposite. Thus, knowing about the processes of appropriation of ICT began to be a diffuse landscape from the very moment when contact was established with the existing literature and even more so when an attempt was made to observe this process in individuals and groups, and to understand it in vulnerable social groups in some sectors of the city of Medell n.

What is clearly established is that the processes of uses and appropriation are not measurable, since they cannot be understood outside of practices located in the daily life of the actors. And, from this perspective, practices imply both a *doing* and a *being*, which requires a recognition of what is done, why it is done, what it is done for, as well as a recognition of oneself and of the others in the situation.

However, many of the programs that have been developed in the city and the country continue to erroneously assimilate the concept of appropriation to that of use, in many cases reducing appropriation indicators to education figures, which makes invisible the subjective and social processes of appropriation that cannot be explained in all their complexity by means of quantitative methodologies and approaches to development such as economic growth.

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Note on authorship

María Elena Giraldo-Ramírez: participated in the research design, the analysis and interpretation of the data, and the manuscript preparation. Isabel Cristina Ángel-Uribe: participated in the research design, the analysis and interpretation of the data, and the manuscript preparation. Maribel Rodríguez-Velásquez: participated in the analysis and interpretation of the data and the manuscript preparation. Oscar Eduardo Sánchez-García: participated in the analysis and interpretation of the data and the manuscript preparation.

Data availability statement

The data underlying the research text are reported in the article.

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