

# Environmental education and Social Cartography: Experiences in a community of Holguín, Cuba.

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## **Abstract**

Social mapping is an important tool to develop environmental education actions in the community because it promotes the active and critical participation of various social actors. The objective of the research was to understand the contribution of social cartography to community environmental education from theoretical and practical budgets, for this we studied the process of environmental education developed in the Oscar Lucero community of Holguin-Cuba through the Green Map project. The research was conducted from a qualitative perspective, analyzing the reality from the complexity, interviews and surveys were conducted that allowed us to listen to the criteria of the people who participated in the environmental education process. The study allowed us to conclude that the social mapping used in the Oscar Lucero Moya community managed to potentiate new social relations with nature, in practice cooperation ties were strengthened through the articulation of actors and new knowledge was built that re-signified the context. In addition, a new worldview was assumed from a complex system approach, which favored the analysis of socio-environmental conflicts revealed as problems.

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## INTRODUCTION

There are different approaches to conceive and practice environmental education (SUAVÉ, 2004). One of these might be social mapping, as a space to produce knowledge, as it allows identifying problems, environmental conflicts and the exchange among a diversity of social actors, besides promoting the collective production of knowledge.

Social mapping has been used worldwide. There are several theoretical developments of participative mapping and experiences which face different environmental problems and conflicts, among them Vélez, Rátiva y Varela (2012), Poggi (2013), Barragan (2016). It has been used in conflicts for the water, for the soil, for mapping towns and communities of the Pan-Amazon area and also in pedagogical social cartography. However, no study was found showing the contribution of social mapping to community environmental education.

In Cuba participative social mapping has been used to face environmental problems through the community environmental action. For 20 years Félix Varela Center has managed to consolidate in the country a Green Map web, that belongs to a global mappers web, which promotes environmental educational actions. Through a national work strategy, they develop projects through which its participants promote participative community environmental actions. Its basic and functional unit is the group, which voluntarily gathers people from a variety of age.

In Holguín province the web is well structured, with the participation of several institutional groups located in different municipalities. Holguín University coordinates the work for environmental education with schools and communities, in its area. This environmental education promotes the participation of every person in the community, which is only completed in all aspects in the country in the local space, when the population from the community exchanges face to face with its representatives, creating an immediate relation between the interests of the population and the political interests (OVIEDO, 2017).

Green Map web in Holguín may be found in several urban as well as rural communities, facing different environmental problems. One of the communities with a major sustained work is Popular Community Administration Council Edecio Pérez, where they have worked

for a longer period at Oscar Lucero Moya community, with the participation of several actors such as the local school. The social-environmental problems of the community are analyzed through project.

This research investigate the relation nature-society in community spaces, in territories where social actors show transformation capabilities. Thus we agree with Saquet (2017) when he said that there is an urgent need to build contextualized knowledge with the singularities and complexities of the communities. Social mapping has been used as a community participation tool in knowledge dialogue.

Social mapping is analyzed as a methodological tool for community environmental education; in order to achieve this, the environmental educational process used at Oscar Lucero Moya community was studied. In this community the Green Map project is developed to promote the participation and local handling of socio-environmental problems. The objective of this study was to comprehend the contribution of social mapping to community environmental education from practical and theoretical approaches.

Community environmental education must start with the reality of the local environment, with the aspirations and interests of the social subjects. Active and critical participation of the people involved in the project is crucial for its development, as well as bounding daily life with the knowledge apprehended. These conditions allow improving the participants' knowledge about their communities and their skills to transform the realities affecting their daily life (ESPEJEL; FLORES, 2012).

## COMMUNITY ENVIRONMENTAL EDUCATION AND SOCIAL CARTOGRAPHY

Environmental education seeks to improve the relations between the population and their environment through knowledge and promoting environmentally friendly behaviors. It is both an education to acquire knowledge and skills, and a natural and built environmentally related ethical and social formation, addressed to form more responsible and sensible human beings (MARTÍNEZ, 2001). As the focus of the study is to unveil what social mapping has to offer to community

environmental education, we consider opening the analysis with Trélles (2002).

Environmental education in its communitarian approach is mainly participative. It seeks to share and not to shed, it is an interdisciplinary complex process, it is an educational process which combines theory and practice, it stimulates critical thinking and action, it searches collective construction of knowledge, it is oriented to the construction of alternative futures (TRÉLLES, 2002).

Community environmental education might be performed from different methodological perspectives. Social mapping according to Herrera (2008) is a methodological and conceptual proposal which allows obtaining knowledge of the area as a whole, from social commitment and participation.

Social Cartography, as a way to represent the physical phenomena, is not always limited to geography, it may also be used to represent non visible spaces that scape from the graphic representations and that belong to culture, through delimiting the territory (BARRAGAN, 2016). Community environmental education needs the interaction with the context and social mapping is a way to graphically represent the details of the territories.

Community environmental education suggests the consolidation of practices that promote ethical and self-responsibility principles and management, thus oriented to deconstruct the values of the rationality of the conventional economic model. By nature, we assume everything that exists and we criticize the way it turned into a consumed resource and degraded in the economical process. Environmental education in the communities needs to rebuild the concept of nature, so we coincide with Leff (2016) to express that environmental rationality opens a deconstructive interpretation of nature denaturalization history and a constructive approach to re-signify it for its cultural re-appropriation and reterritorialization.

Some of the benefits of using social mapping in community environmental education include providing an opportunity to represent context through maps, contributing to represent social phenomena from multiple perspectives or ways to analyze reality, which includes criticism to the way of appropriation of the socio-environmental resources.

Environmental community education highlights the context and imposes the urge to substitute knowledge and pedagogical practices supported by a narrowing vision of knowledge

by those driving the individuals to a multidimensional vision, thus analyzing phenomena from its complexity. The complexity, as discussed by Edgar Morin, proposes the challenge of another way of thinking, with important implications for the analysis of the theory and practice of environmental education (SAHEB; RODRÍGUEZ, 2017).

Complexity shows connections and interactions that occur among the processes in course, so Morin (1996) says that complexity occurs where there is an interconnected web of actions. However we learn how to separate and simplify. Complex thinking is always local, it is located in time and moment, it is not complete, and it knows in advance that there is always uncertainty.

We consider that using social mapping in educational community actions allows the development of complex thinking, as social mapping assumes a vision of reality in epistemological terms and proposes an analysis through mapping methodology. This methodology takes a post-critic view which is combined with elements of complex thinking by Edgar Morin (TELLO; GOROSTIAGA, 2009).

Social mapping allows visualizing and integrating knowledge and perspectives which take the socio-environmental problems into context and reveal how they occur. While mapping individuals interact and subordinate their private interests by those of the community, taking sides to face the problem. Using social mapping in environmental education means changing from pedagogical practices through schooling and general instruction to formation processes strengthening life in community, cohabitation and the development of sensitivities and critical positions related to culture and the ecosystems.

According to Martínez (2010) some of the purposes of environmental education to attain a sustainable development are:

- Understanding the complex nature of the resulting environment from the interaction of its biological, physical and cultural aspects.
- Acknowledging the importance of the environment for the economic, social and cultural development activities.
- Showing the economical, political and environmental interdependencies of the modern world for which everyone's

behavior and decisions may have consequences.

- Understanding the relationship among the physical, biological and socio-economical aspects of the environment, as well as its evolution and modification over time.

Using social mapping in community environmental education contributes to the purposes announced by Martínez (2010). It also promotes a new relationship between the social actors taking part into the environmental educational process, with nature, as because they have to get to know the ecological, territorial, economical, social and cultural processes; that is, the critical analysis of the local socio-environmental problems and their relation with the human actions and the managing models.

The extent of participative mapping allows us to think of the community possibilities beyond official mapping in which graphic narrations limit subjectivities, this alternative option associated by some researchers with participative research-action (IAP from its acronym in Spanish), is especially relevant in the work with communities and it has certain particularities bounding it with participation and transformation (BARRAGAN, 2016, p.251).

Social mapping eases the actions of community environmental education, where context is relevant for the educative action. The main core of community environmental education should be a dialogue with simple, clear and entertaining activities resulting on an understanding of the message, on an awakening of interest for the better knowledge of the socio-environmental processes and on a recognition of diversity that allows applying and achieving fundamental rights inherent to the human beings (DUQUE; QUINTERO; DUQUE, 2014).

Community environmental education emphasizes the relation theory-practice, considering learning through projects, free education, participative learning shops, creative literary processes, painting, guided tours, games and dynamics. Community environmental education works around recovery and dialogue of knowledge. Moreover it is addressed to perform real-life practices.

Social mapping contributes to an active community environmental education and we

agree with López (2019) as he said that it allows to perceive relationships in the environment and it studies the consequences of the social and territorial interactions. Besides it could be considered as a conflict resolution tool where both sides may transform a problem into diverse creative and dynamic solutions.

It is indeed important that environmental education at the communities involves all social actors ruling community life and that it includes educative practices and methods designed to emphasize on its interdisciplinary and inter-subjective approach. By combining both social cartography and environmental education, connection and dialogue spots are established promoting to build more solid foundations in materializing sustainable communities.

One of the main issues of social mapping is that it allows visualizing and eventually integrating different perspectives which conceptualize the phenomenon and the way they interact and interrelate. Besides it shows as a valid attempt to face the challenge of post-modernism of accounting for different perspectives of knowledge. (TELLO; GOROSTIAGA, 2009, p.166).

Community environmental education requires integrating different perspectives as the environmental crisis expresses the limits of growth and the unsustainability of the economic rationality. These are the consequences of the history of western knowledge, of the universalization of the scientific veracity, of the hegemony of one-dimensional thinking, of the productivism, which reduces everything to its monetary value and which rules the world following market laws (LEFF, 2016).

Community environmental education contributes to face the environmental crisis and turns the educative environment into participation spots where learning is achieved while building a knowledge process which promotes actions with the politic intention of changing and transforming reality. All this process within an educational environment benefits the critical character of environmental education (GUIMARÃES, 2007).

Using social mapping in environmental education goes beyond graphic representation, thus we agree with Barragàn (2016) when he said that during this process educative actions happen bounding participants to transform their communities, during these practices

cooperation ties and learning in pairs is strengthened. This way the understanding of the different educational topics is re-signified, and they should be mapped cartographically according to the participants' experience.

This way community environmental education becomes critical and allows the participation of social actors in actions addressed to transform the specific reality enhancing new social relations with nature. However it is not enough to note problems and environmental contradictions, it is necessary to act. In order to achieve critical environmental education, practice demands knowing the relationships in reality. (LOUREIRO; COSSIO, 2007).

When school conceives environmental education related to the community, it eases the understanding of the world. It is not limited to an accumulation of ideas and knowledge, we are beings of relationships and it is through them that we acquire the experience to face and adapt to the different situations. It is precisely by bounding theory and practice that we may understand the impact of our actions in the world. In order words, eventhough knowledge is developed through ideas, categories and concepts; it is by facing reality that we may develop a deep understanding of the relation between society and nature.

Community environmental education using social mapping places knowledge of the community on the front page as it highlights the perception of its identity and territory, the same way map-making starts from selecting data and information from the community. Approaching community shows the subjectivity in the process such as values, beliefs, interests and wills of the subjects involved in the mapping process (BARGAS; CARDOSO, 2015).

Community environmental education needs to consider all social and educational aspects, as people, groups and communities are at the same time affected and benefited by the transformations of the physical environment. In the same way all socio-educative intervention needs to consider the environmental aspects involved, as this intervention is always developed in a specific socio-physical environment. In this context, community environmental education turns into a key element for transforming the environment, for personal and social growth of the people; in short, what we may tag as

educative socio-environmental sustainable development (MUNOZ; ESTEBAN, 2011).

Conscious learning of the relationships between environment and life is not accomplished by a decontextualized learning of the environment. It is only through an educational and reflexive exercise that human beings understand causality, meaning the relations between our actions and its repercussions in the ecosystems. Only in the acting universe the authentic presence of the individuals mapping their own reality exists; otherwise it would just be a diagnosis (BARRAGAN, 2016).

### *Methodological strategy used*

The research was performed from a qualitative perspective, analyzing reality from its complexity. The environmental crisis is above all a problem of knowledge which leads to rethinking the human being from a complex world. Environmental complexity irrupts from its denial by metaphysical thinking and by the alienation and uncertainty of an unsustainable rationality (LEFF, 2012).

This research analyzed the contributions of social mapping to community environmental education through a case of study. For this we selected Green Map project at Oscar Lucero Moya community in Holguín. We coincide with Álvarez San Fabián (2012) as he said that the study of a particular case us to know the specific, the idiosyncratic, without neglecting the context. Emphasis is made in the contextualization of the research object, when assuming the case study is an empirical research, aimed at surveying a contemporary phenomenon within its real context.

Green Map project used social mapping as a methodology to materialize actions of community environmental education. This project was developed in three stages: the first one "Socio-environmental community diagnosis" aimed to organize participative group activities with the community such as work-shops and guided tours as a way to raise the socio-environmental problems collectively to be critically analyzed further on.

The second stage "Community Symbology" is the one with the graphic representation of the socio-environmental problems symbolically represented by the construction of several maps. At this stage the green groups were created which organized the tours and taught the Green Map iconography system and helped create their own symbols. The third stage was

“Rehabilitation and community transformation”, in which actions were performed to change reality through meaningful and collective planning.

We carried out interviews to study the contribution of social mapping to community environmental education at Oscar Lucero Moya community. This method allowed us to listen to the criteria of the persons who participated in the environmental education process. We agree with Duarte (2004) when he said that interviewing allows us to understand the logic of the relations established inside social groups the person interviewed is part of.

Eight key actors in the execution of the project were interviewed: two professors of Holguín University, who coordinated the project; two professors of Oscar Lucero Moya local school, as the school played an important role in materializing each and every one of the stages of Green Map project; the President of the Popular Council of the community, as the top representation of the government in town with a wide knowledge of the community and for his role with coordinating all actors through the community group he rules; a community leader for his contribution to mobilizing the population, a member representing the masses neighborhood organization Committees to Defend the Revolution (CDR *from its Spanish acronym* ) and one member of the women's organization Federation of Cuban Women (FMC *from its Spanish acronym* ). These last two organizations have a large number of members within the community and actively participated in the project. Besides, a questionnaire was applied to 111 members of the community to learn their criteria about their participation in the actions promoted by the project.

The community chosen for the study is a periurban community known as “Oscar Lucero Moya”, which is part of Popular Council “Edecio Pérez”, located in Holguín city. Its geographical limits are to the north Lenin and Purnio Districts, to the south Pedernales and the industrial area, to the east Harlem and to the west Yareyal. It is located in the center-west of Holguín municipality and it is divided by the central road.

There are 254 houses in this community with 1734 inhabitants. The population has a mixed origin: 57% of the inhabitants are from a rural origin while 43% have an urban origin, . Another important issue with this community is that approximately 40% of its population has lived there for 30 to 40 years and only 33% of the actual inhabitants were born there. There

are social problems in the community such as alcoholism and uprootedness as about 27% of the inhabitants were temporarily relocated in the area as they lost their homes during Hurricane George in 1998. They had to stay in boarding places for six years which increased conflicts among them causing personal disarrange and leading them to affect the buildings where they were relocated, some of them with historical value.

This community has patrimonial values as well as a great potential regarding its physical-environmental space as it is located on Matamoros River basin, which is a symbol for the local population and a place of entertainment. Eventhough the contamination of its waters should forbid them from swimming, several people negligently use them . This community is also located near the protected area “Dos Rios”, which has great values for its local endemic flora.

## RESULTS AND DISCUSSION

### *Environmental education and social mapping at Oscar Lucero Moya community in Holguín, Cuba*

Green Map project is how social mapping is applied in the community environmental process developed at Oscar Lucero Moya community. This practice allows understanding the contributions of social mapping to environmental education, as it contributes to the collective building of knowledge through map making, promoting communication among the participants and highlighting different kinds of knowledge that are combined to form a collective image of the community.

In the interview with the professors of Holguín University, who coordinated the Green Map project, they revealed that during the environmental education at the community they organized both green groups to deal with topics that favor awareness of the sustainable use of the socio-environmental resources. They contributed with a new worldview addressed to deconstruct old paradigms that keep men apart from nature. They also explained that they used an interdisciplinary approach and considered the complexities of the environment while mapping to visualize the socio-environmental problems that would lead to actions to transform reality.

When analyzing the preparation of the mappers it was unveiled how social mapping allows a better understanding of the relations between society and nature, viewed through the socio-environmental problems of the context. Maps may reflect any topic, which allows working with the socio-environmental issues of the community. Through them conflicts and troubles of the community are fully unveiled, thus allowing for their total transformation. Maps may provide diverse information regarding the needs and interests of any place (BRACERAS, 2012).

Environmental knowledge builds its own utopia starting from the potential of the reality and performing wishes that trigger practical principles and social meanings to build a new reality in which processes may be mobilized to attain certain goals (LEFF, 2012). Through community environmental education its socio-environmental characteristics were developed, such as local biodiversity, socio-nature risks and community foresight.

Building the green maps at Oscar Lucero Moya community was a participative process, where the school and the local inhabitants determined the relevant places of the area. They spotted the places with socio-environmental conflicts, such as Matamoros River, the protected area Dos Rios and the productive areas of cooperative Atanagildo Cajigal. Being a community located in the periphery of a big city, some urban conflicts such as the lack of basic phone services and transportation were evidently identified, as well as some rural ones related to the use of natural resources, e.g. the river, the nature preservation area and the agricultural and livestock-related activities.

Conflicts about the Matamoros River deal with water contamination. With no treatment systems in place and having both productive entities and homes throwing residual waters to the river, pollution prevents the inhabitants from using its waters for either consumption or recreational purposes. Another conflict identified, this time at the protected area Dos Rios, was the anthropic action causing endemic species from the local fauna to go extinct, such as the dwarf Holguin cactus (*Escobaria cubensis*). Other risks were also diagnosed, such as an increase of dry periods and forest fires.

In an interview with the professors of the local school they explained that for drawing the green maps of the community several tours and

work-shops were organized and they were attended by local inhabitants and by governmental and institutional actors. Figure 1 shows one of the maps made by the community members. They also designed a map showing the biodiversity of the area, another one with its patrimonial values and a map of the dreams showing the planned transformations along with the already accomplished ones.

Social mapping used at Oscar Lucero Moya community revealed socio-environmental conflicts. It contributed to strengthening the sense of community belonging. It showed its most vulnerable places facing floodings and forest fires and it also provided information for decision making. It stimulated the exchange of ideas through horizontal communication among participants. Hence this action was the result of multiple alliances between the school, the community group and the cultural center. The mapping process contributed to mobilize and connect the main actors of the community facilitating their participation in the community environmental education.

Map making permits literally or figuratively involving participants and establishing interrelationships among them. Thus knowing local communities takes top priority, enhancing the inhabitants' perception of their territory. Moreover values and beliefs of the participants are highlighted (BARGAS; CARDOSO, 2015).

Social mapping contributed to community environmental education at Oscar Lucero Moya community with educational practices involving several actors of the community, such as the local school, the Community Group, nongovernmental organizations such as the Cuban Association of War Veterans (ACRC from the Spanish acronym), the Federation of Cuban Women, the Citizens' Committee for the defense of the revolution, and also political organizations such as the Cuban Communist Party (PCC from the Spanish acronym) and other institutions such as the Family Doctor Consultation, the Cultural Community Center, the Agricultural and livestock farm cooperative "Atanagildo Cajigal", the urban organic farm among others, all represented in figure 2. Their actions served to the needs of the community and to create alliances in the search for a common goal. Moreover, they modified the individual knowledge and those of the participant social groups and they worked from the daily reality to value popular knowledge.

**Figure 1-** Map of risks designed by the inhabitants at Oscar Lucero Moya community.



Source: Photograph taken by the authors.

We agree with Bozzano (2017) when he said that social actors contribute to understanding social relations with the natural and the built-up environment, its contradictions, conflicts and relations of power. Social actors carry with them cognitive and practical interests representing a group, an institution, a political, economic or citizens' organization; they represent and stand for the territories.

The participation of actors in the community environmental education processes provides with an exchange of knowledge and with the empowering of the subjects involved. Moreover, it allows the coordination of group tasks that involve private and community interests. We mean as social actors the institutional agents, the governmental, non-governmental and political organizations which interact in the environmental community practices promoted by Green Map project.

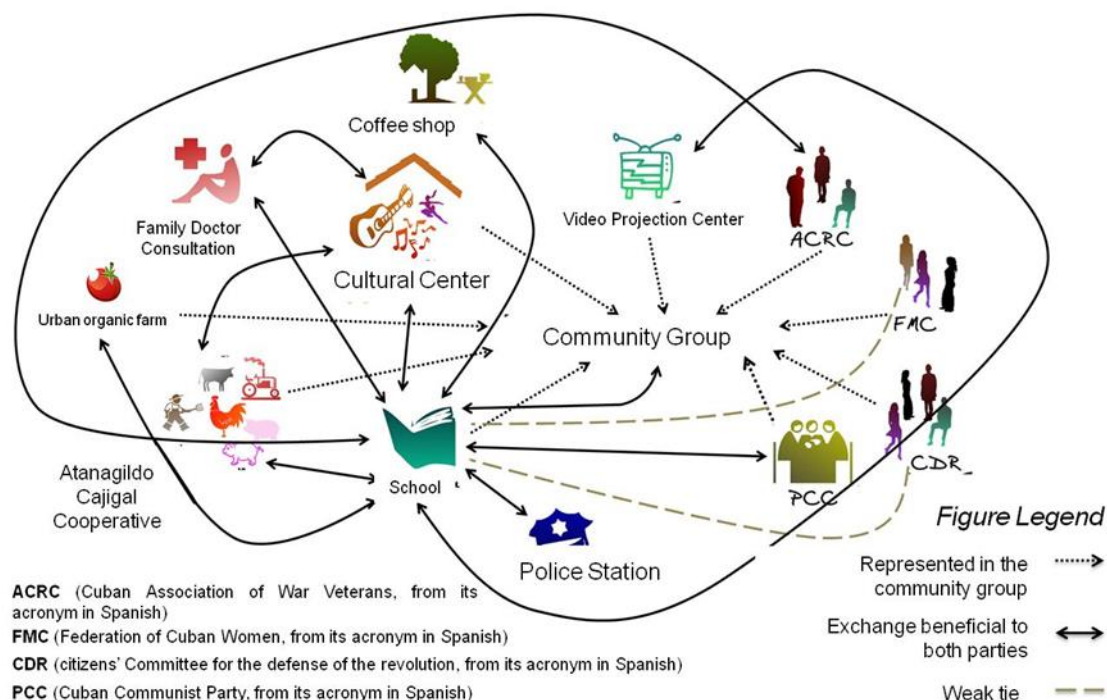
As represented in Figure 2 schools in Cuba are considered socio-cultural centers in the

community. Oscar Lucero Moya School has managed to organize strong ties with institutional actors and existing non-governmental organizations in the community. Community environmental educational actions are performed with the participation of several social actors considered active subjects and not objects of external practices.

Participation is significant in the community environmental education processes. It may be achieved through critical analysis of the community needs and problems, through the evaluation of alternatives and the balance of available resources. While participating in community actions the feeling of belonging to the community emerges. This feeling is the seed of commitment to the whole process ; collective decision making represents the materialization of real participation and it is the way to exercising citizens' protagonism (REBELLATO, 2004).



**Figure 2** - Articulation of actors in the environmental education process at Oscar Lucero Moya community.



Source: Elaborated by the authors

When questioning the 111 participants on the survey at Oscar Lucero Moya community regarding their participation on the environmental community actions promoted by Green Map project, 78.38% had positive answers.

Although 78.38% of the surveyed persons confirmed their participation in the environmental community activities, we consider the extent to which they get involved in it is still limited. We agree with Conde (2009) when he said that in Cuba community participation in the educational processes is restricted and almost non existing in the impact evaluation stage and even more scarce in the community systematization, as a process of critical reflection of one or more experiences.

When interviewing the President of the Popular Council, a leader of the community, a member of the CDR and a member of the FMC, about how to improve community participation in the project, they provided the following criteria:

- To work more in the community as things improve with the results of the hard work
- To organize more activities at the community Cultural Center

- To design activities specially addressed to the youngsters and promote them better
- To favor cultural growth of the inhabitants through stimulating educative work as their level of education is very low
- To perform more activities involving youngsters and the rest of the community members.
- To organize more cultural and recreational activities.

According to Trélles (2015) taking part of environmental community actions is not merely people formally pertaining to something; it is more than that, it allows them to become an active expression of the transformation processes of their territories. The use of social mapping at Oscar Lucero Moya community through the Green Map project made it possible to carry out important educative actions, such as planting Jose Martí's forest. In the yard of Oscar Lucero Moya School, most of the flora species described by José Martí (National Hero of Cuba) in his military campaign diary was planted.

This activity was not only significant for what it represented for biological biodiversity

as 23 different species of our flora were planted but it also had a strong patriotic and historical content as it highlighted the values of the hero. This way they brought about present-day problems starting from the historical memory detailed in the diary, where 32 different tree species belonging to 34 different genders of 20 agroforestry families are described, some of them in danger of extinction and some of them already extinct.

Some transformations to the physical space of the community were made as the buildings with patrimonial value were restored. These buildings have a historical value as first they were used as a military garrison during Batista dictatorship until 1959, when, they were turned into a school after the Revolution triumphed. When the government built new places for schools the old facilities were used as boarding places for the people who had lost their homes during Hurricane George in 1998. Six years later the boarding places were turned into houses and the families hosted there started to live permanently at Oscar Lucero Moya community.

Social mapping made by Green Map project at this community took into account the site's patrimonial values, as the buildings that were first a military garrison, then a school and then houses. That is an important element of their identity which favored community transformation. Thus we may assure that the patrimony becomes a social complicity spot, expressing the solidarity that bounds the people sharing the same cultural values (GARCIA, 2009).

In the interviews made with the President of the Popular Council of the community, two professors from the local school and the members of the CDR and FMC, they all agreed that the actions made at the community have made it possible to perceive an improvement of the feeling of belonging of the inhabitants for their community, as well as to recognize the historical and patrimonial values of the area. This leads us to think that one of the contributions of social mapping to community environmental education at this place, was that it allowed the population involved to visualize the architectural and historical values of their community which may have lessened the uprootedness problems in the people who lived there first provisionally and then permanently.

The actions of community environmental education were not only addressed to refurbish the buildings. They were also addressed to the natural areas such as Dos Ríos flowers reserve,

located in the proximities of the community. This was the perfect spot to organize educational activities, such as identifying flora species, studying the most significant flower values of the area and the recovery of native and endemic species. All of that not only made it possible to feel nature but it also created collaborative knowledge during organized tours.

The tours were a tool to gather information to map the endangered flora species from Dos Ríos flower reserve, which allowed exchanging knowledge about the biodiversity of the area. We agree with López (2019) when he says that social mapping is educational by essence because it permits the collective gathering of knowledge which is materialized in the map making that manages different kinds of knowledge.

Community environmental education displayed at Oscar Lucero Moya through Green Map project was adjusted to its context, dialoguing with the participants, considering how complex and interdisciplinary environmental topics may be. The topics analyzed emerged from local daily life. Learning by doing it was one of the principles applied, skills were developed combining theoretical and practical activities.

We consider the community environmental education actions performed at Oscar Lucero Moya as transforming, thus we agree with Ferreira (2013) when he said that environmental education by itself will not be able to transform society although it might be a starting point to incentive reflections and shores that may contribute to reducing environmental damage. The creative and motivational space during the environmental education process at the communities favors the outburst of new ideas that contribute to building sustainable societies.

During the environmental education process at Oscar Lucero Moya community, its leaders were very supportive. Leadership is not just something they do, it is focused on interactions. Two decades ago leadership began to be understood more as linked to a community than to an individual, as it is not only one person but several who take leadership at different contexts (ANDRADE, 2013). Paulo Freire considers leadership may grow in parallel to the growth of the whole, based on a new social perception they are building together. Otherwise it will be substituted by emerging leaders (FREIRE, 1997).

Community leaders at Oscar Lucero Moya worked as intermediaries between the external agents such as the professors of Holguín University and the community; this way they became key actors. They represent the demands of the community and it is through them that work is organized. When a leader stops representing the collective interests of the community, he just stops being followed. This is not a static position; it is a constant expansion and contraction process of leaders whose visibility depends on the needs of the community (ANDRADE, 2013).

Community leaders at Oscar Lucero Moya were decisive actors as they lead the collective actions which, according to Barragán and Amador (2014), is the main aspect of any social mapping. All political, cultural and interpersonal components make it possible that virtual reconstruction of reality will turn into a legitimate way of building possible worlds.

## FINAL CONSIDERATIONS

The study of Green Map project at Oscar Lucero Moya community proved the contributions of social mapping to community environmental education as. This was so since, by means of social mapping,

- The inhabitants were able to raise the socio-environmental problems in a joint reflection, in a dialogue of knowledge, they shared about biodiversity, risk management and sustainability. They took actions addressed to reforestation, to the protection of the endemic flora of the area; they identified vulnerabilities for floodings and forest fires and rescued patrimonial buildings.
- The participation of social actors in actions addressed to transforming the socio-environmental reality of the community, was stimulated. Leaders played an important role in these actions, thus facilitating the coordination of collective tasks that involved both social and individual interests.
- The school became the most important socio-cultural center of the community, managing to achieve strong ties with other existing actors in the territory and with the University of Holguín, as well as with non- governmental organizations such as CDR and FMC; thus allowing to develop

inter institutional and interdisciplinary activities.

- The new social relations with nature were highlighted, cooperation ties were strengthened and new knowledge was built, re-signifying the context. Besides a new worldview from a complex system approach was assumed favoring the analysis of the social-environmental conflicts revealed as problems.

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