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Interfaces of Environmental Education: A Study in a Community Association of the Semiarid Region of Bahia (Brazil)

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A B S T R A C T

This written production is part of an ongoing research of the Postgraduate Course Latu Sensu in Education in the Field of the Federal Institute of Education, Science and Technology of Bahia, Campus Serrinha. The main purpose of the study is to diagnose environmental perceptions of the caatinga of the social actors of a community association of the semi-arid region of Bahia. Thus, this study aims to answer: How does the environmental perception of caatinga relate to the agricultural production of the social actors of the Bahia Semiarid Community Association? The research is anchored in the qualitative approach of the research-action type and will be used as a research technique the planning and realization of intervention and reflection of action. In this way, it was analyzed through participatory diagnosis that there is a close relationship between the perception of the caatinga biome of the research actors and the local agricultural production. In this sense, this research contributes to the voices of the social actors included in the action research activities being heard, challenging the environmental perception of the caatinga, problems and potentialities from the place they live, since the environmental perception is understood in the study of symbols and meanings assigned to a certain object.

Keywords: Education, Culture and Diversity.

Interfaces da Educação Ambiental: Um estudo em uma Associação Comunitária do Semiárido Baiano

R E S U M O

Esta produção escrita compreende-se em uma pesquisa em andamento do Curso de Pós-Graduação Latu Sensu em Educação do Campo do Instituto Federal de Educação, Ciência e Tecnologia Baiano, Campus Serrinha. Para tanto, o intento principal do estudo é diagnosticar percepções ambientais da caatinga dos atores sociais de uma Associação Comunitária do Semiárido Baiano. Assim este trabalho anseia em responder: De que forma a percepção ambiental da caatinga relaciona-se com a produção agrícola dos atores sociais da Associação Comunitária do Semiárido Baiano? A pesquisa está ancorada na abordagem qualitativa do tipo pesquisa-ação e será utilizada enquanto técnica de pesquisa o planejamento e realização de intervenção e reflexão da ação. Á guisa disso, foi analisado por meio do diagnóstico participativo que existe uma estreita relação da percepção do bioma caatinga dos atores da pesquisa com a produção agrícola da localidade. Nesse sentido, essa pesquisa contribui para que as vozes dos atores sociais inseridos nas atividades da pesquisa-ação sejam ouvidas, destarte a percepção ambiental da caatinga, problemáticas e potencialidades a partir do lugar que vivem, haja vista que a percepção ambiental se entende em o estudo dos símbolos e significados atribuídos a determinado objeto.

Palavras-Chaves: Educação, Cultura e Diversidade.

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1. Introduction

Environmental perception consists of understanding symbols and representations from subjectivities, context, life stories, and space relations. Thus, in this research, it is essential to point out that the perception of the caatinga of social actors of the Community Association is in the semi-arid region of Bahia studying through the mental map representation.

Thus, the research is eager to answer: How does the environmental perception of caatinga relate to the Bahia Semi-arid Community Association's social actors' agricultural production? Therefore, the research's primary purpose is to diagnose environmental perceptions of social actors' caatinga inserted in action research activities.

Thus, the specific objectives include analyzing how the community Association's social actors understand caatinga, identifying the environmental perception of caatinga with the social actors' agricultural production action-research, and elaborating a booklet approaching the coexistence with the semi-arid region.

This base written production is on the principle that Environmental Education promotes practices and actions inside and outside school spaces in a holistic perspective, involving the various social, cultural, political, and economic aspects of society to understand the phenomena related to environmental issues. For, "in our understanding, the basilar of Environmental Education comprises the diagnosis of perceived problems and the expression of visualized solutions, considering the subjective involvement of individuals and public policies [...]" Ruscheinsky & Costa (2002, p. 84).

The methodology of this study follows the qualitative approach. It considers the context and social actors involved because, as Apolinário (2012, p.610) tells us, qualitative research "is the one that normally foresees the collection of data from the social interactions of the researcher with the researched phenomenon."

Furthermore, this study is action research whose diagnosis corresponds to a stage in which the aim is to analyze the intervention's empirical field. However, it is necessary to delimit the techniques and tools used without losing sight that the planning of action research is flexible. According to Thiollent, "[...] there is always a shuttle between various concerns to be adapted according to circumstances and the group of researchers' internal dynamics researchers' internal dynamics in their relationship with the investigated situation". (Thiollent, 1947, p., 47).

In this way, action-research consists of a dynamic process that can articulate theory with practice, since the researcher, according to Dionne (2007, p. 29) "is obliged to consider, in a more in-depth way, the experience of the actors and participants and to provide pertinent explanations for the action. Furthermore, in this interaction, to carry out the diagnosis, one of the strategies was the focus group, which constitutes "[...] an important technique for the knowledge of the representations, perceptions, beliefs, habits, values [...] prevalent symbologies in the treatment of a given issue [...]". (Gatti, 2012, p., 11).

Research-action is an empirically based research strategy (Thiollent, 1947) oriented towards social reality intervention. In this sense, research, and action in this type of study simultaneously understand a specific social object to intervene.

Therefore, this action research has a technique for planning and realizing the action's interventions and reflection.

According to Thiollent (1947, p.14).

> [...]pesquisa-ação é um tipo de pesquisa social com base empírica que é concebida e realizada em estreita associação com urna ação ou com a resolução de um problema coletivo e no qual os pesquisadores e os participantes representativos da situação ou do problema estão envolvidos de modo cooperativo ou participativo. (Thiollent,1947, p.14).

In this way, it recommended the Participatory Rural Diagnosis-DRP as a diagnostic action methodological strategy to use. The social actors inserted in the activities of a Community Association of the

semi-arid region of Bahia, municipality of Conceição do Coité, located in the Territory of Identity of Sisal, are the subjects of the research.

Verdejo writes (2006, p. 12):

> O Diagnóstico Rural Participativo (DRP) é um conjunto de técnicas e ferramentas que permite que as comunidades façam o seu próprio diagnóstico e a partir daí comecem a auto gerenciar o seu planejamento e desenvolvimento. Desta maneira, os participantes poderão compartilhar experiências e analisar os seus conhecimentos, a fim de melhorar as suas habilidades de planejamento e ação. (Verdejo, 2006, p.12).

Moreover, the diagnosis in research-action understands in a fundamental step in this type of research methodology. From the techniques used in the diagnosis, it is possible to rationalize the research problem to intervene from the analyzed results. Action-research there is always this coming and going of situations; it "[...] has been conceived mainly as a methodology of articulation of knowledge and action (in the sense of social, pedagogical and militant action)". (Thiollent, 1947, p., 110).

2. Development

2.1 Non-formal environmental education and the caatinga biome: interfaces

The perspective of non-formal Environmental Education aims to discuss environmental perception as understanding concepts, perceptions, and meanings attributed to the researched subjects regarding knowledge of the environmental issue. Therefore, Law 9.795/99 understands non-formal education as that developed through educational actions and practices aimed at raising the collective's awareness on environmental issues and its organization and participation in defense of the quality of the environment" (BRASIL, 1999).

Therefore, there is a need for research in the field from the environmental issue's perspective, emphasizing the Caatinga biome. The Caatinga has its limits closely in the national territory, but little studied, besides being the "least protected Brazilian natural region, because conservation units cover less than 2% of its territory". (Loyal; Tabarelli & Silva. 2003, p., 13).

In this sense, According to Leal et al. (2003):

> A Caatinga continua passando por um extenso processo de alteração e deterioração ambiental provocado pelo uso insustentável dos seus recursos naturais, o que está levando à rápida perda de espécies únicas, à eliminação de processos ecológicos chaves e à formação de extensos núcleos de desertificação em vários setores da região. (Leal; Tabarelli & Silva. 2003, p. 13).

Moreover, this environmental degradation process affects ecosystems, capable of causing desertification and consequently the exodus of the population from the countryside that inhabited these sectors of the region. There is a loss of biodiversity and aspects inherent to cultural issues. Thus, "[...] the degeneration of urban and rural environments in the search for the exploitation of species and activities that are more valued in the economic and production environments tends to promote priceless losses of quality of life by the populations. (Giesta, 2002, p. 157)

It is essential to point out that although the caatinga biome's environmental degradation is not a current problem. It is not only an environmental problem, but there is also a political and ideological framework that goes through this issue of stereotyping the caatinga biome as an undeveloped environment, "[...] which is currently considered as one of the most devastating biomes in Brazil (Evangelista, 2011, p. 2).

Thus, the words of the Evangelist (2011) must be considered when he says that:

> A maioria dos estudos sobre a caatinga refere-se ao uso dos vegetais nas atividades econômicas, à utilização das plantas na medicina tradicional da região (etnobotânica) ou, ainda, à catalogação das espécies existentes em determinadas áreas, principalmente, as endêmicas (fitogeografia). Esses estudos, entretanto, ainda são insuficientes, como também o são as análises sobre o processo de degradação da caatinga, um reflexo da falta de interesse pelas florestas secas, consideradas como um dos mais ameaçados ecossistemas do planeta. (Evangelista, 2011, p. 2).

The process of environmental degradation of this biome is due to several factors, such as "[...] inadequate agricultural practices, deforestation, infertility and soil compaction, erosive processes, and the salinization of some areas [...]". (Brasileiro, 2009, p.3).

Environmental degradation is not a new theme under discussion. According to Feitosa (2014), in Brazilian history, we can see figures who influenced Brazilian environmentalism and condemned slavery, like José Bonifácio de Andrade in the 19th century and Joaquim Nabuco in 1883.

In this context, the urgency for change goes beyond a formal educational process. For Feitosa (2014), education is a key element in promoting sustainable local development and "[...] the politicization of environmental values is expressed, above all, in non-formal education projects carried out by ecological groups in the communities, linked to the defense of their environment, social appropriation of nature and self-management of their production resources [...]". (Feitosa, 2014, p., 29):

> Portanto, a demanda em Educação Ambiental, voltada ao conhecimento sobre o contexto semiárido ainda é muito alta[...] assim, iniciativas precisam estar sempre fortalecidas e se ampliando no sentido de tornar a discussão/reflexão sobre as questões ambientais o eixo orientador das políticas educacionais que mobilizam o fazer pedagógico da caatinga, seja nos espaços formais ou não-formais da educação na região. (Feitosa, 2014, p. 34).

Thus, the need to incorporate issues concerning the caatinga biome into the environmental debate in Bahia's semi-arid region is becoming more urgent. It involves people from this context with the problems and potentialities from their places of living.

2.2 Relationship of Caatinga with the concept of place: perceptions and potentials

This written production resulted from the DRP applied in a Rural Community Association whose tool was the mental map. Therefore, it follows this diagnosis's writing, presenting the results and analysis obtained through the mental map during the programmed workshop entitled "Caatinga what is this place? Understanding perceptions and senses attributed to the caatinga biome of the researched social actors.

2.3 Diagnostic action

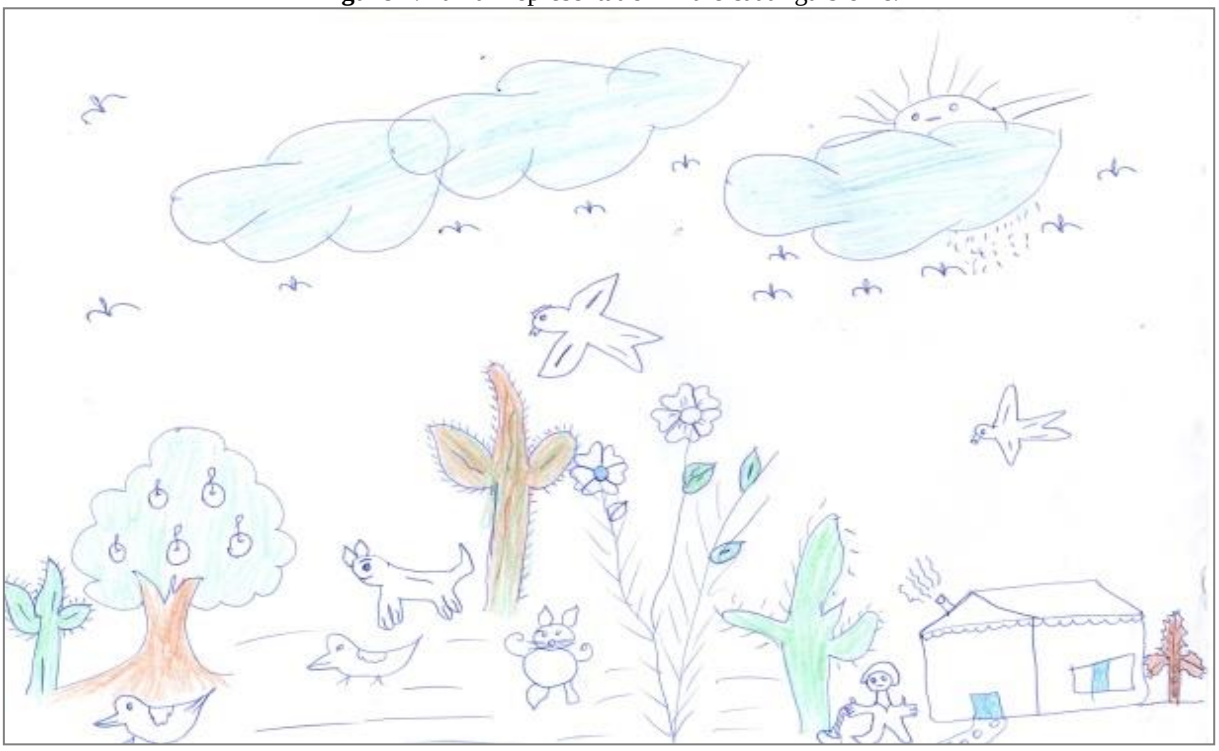
The workshop's first activity, "Caatinga, what is this place?" was the realization of individual presentations through the "Dynamic web of friendship," The participants identified themselves by presenting their profession and which social groups they compose. This moment brought integration to the group and relaxation and reflection on each subject's importance in the social groups that participate.

The mental map was then applied by constructing drawings with the question "Caatinga, which place is this?" Initially, some workshop participants encountered resistance because it was not an everyday activity of the group researched.

Among the aspects of the mental maps, the representation of the species of fauna and flora native to the locality stands out, like the cedro (*Cedrus*), mandacaru (*Cereus jamacaru),* xiquexique *(Pilosocereus Gounellei*), licurizeiro (*Syagrus coronata*), pau ferro (*Caesalpinia leiostachya*), pau de rato (*Leguminosae caesalpinioideae*), a quixabeira (*Sideroxylon obtusifolium*), cobra coral (*micrurus corallinus*), among others.

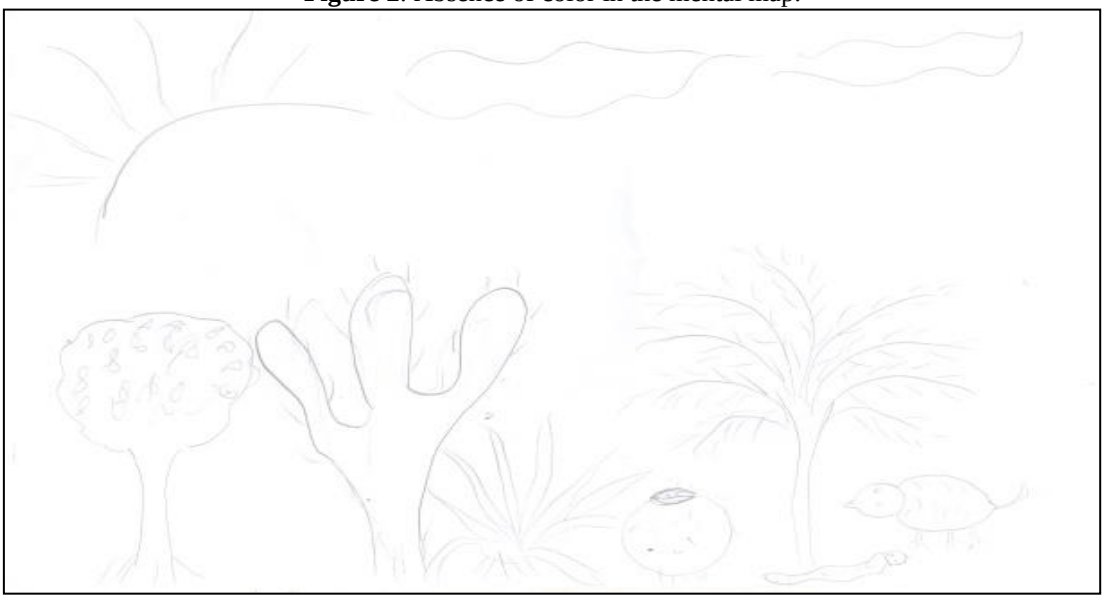
One can also perceive the human figure's representation in mental maps and the close connection of the caatinga biome with the place of experience of the researched actors. The mandacaru close to the human figure denotes a utilitarian conception of nature. This xerophytic is widely used in the semi-arid to serve as feed for animals. The rain on the mental map represents hope for the semi-arid people (Figure 1).

Figure 1: human representation in the caatinga biome.



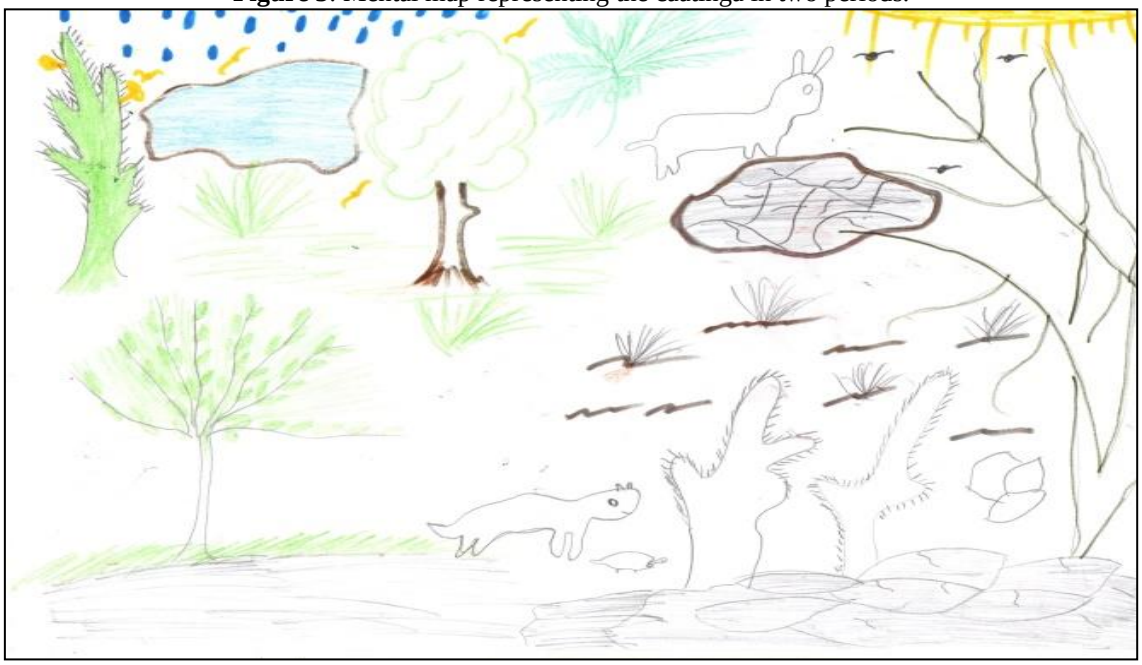
Besides, appoint another aspect that was the absence of color in figure 2 drawing. According to this drawing's social actor, this is justified because the Caatinga has been going through the deforestation process, causing biodiversity loss. The human figure does not appear; however, the fauna and flora are represented in the map below.

Figure 2: Absence of color in the mental map.



Another element that is also called attention is the symbology of rain and sun in mental maps. It is possible to analyze in the representation when on one side of the map the rain with a green vegetation cover and water in the dam and on the other side the sun with portraits of vegetation and dry weir appears (Figure 3).

Figure 3: Mental map representing the caatinga in two periods.



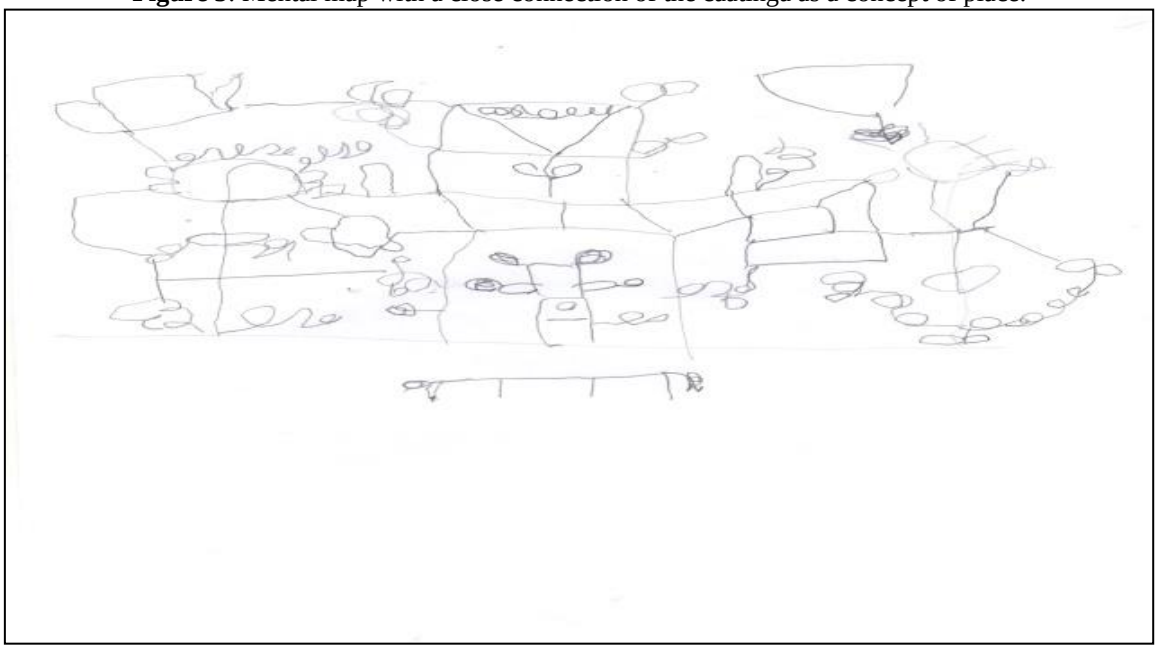
Interesting when the social actor in the representation below compares how the Caatinga was and how it is today (Figure 4). This mental map associate that previously, the pluviometric level in the Caatinga was higher. According to this drawing, the vegetation cover was green; on the other hand, the temperature is higher due to the biome's human action.

Figure 4 - Comparative mental map.

Furthermore, it is interesting to note that the mental maps constructed associated the caatinga biome with the concept of place, representing the residential house, for example. The group researched the caatinga biome beyond flora and fauna, being a place of experiences and social relationships (Figure 5). According to Evangelista, "from an ecodynamic perspective, elements related to nature should not be analyzed separately from social aspects, since nature interferes with social transformations, processes of appropriation, production, and reproduction of space (Evangelista, 2011, p. 12).

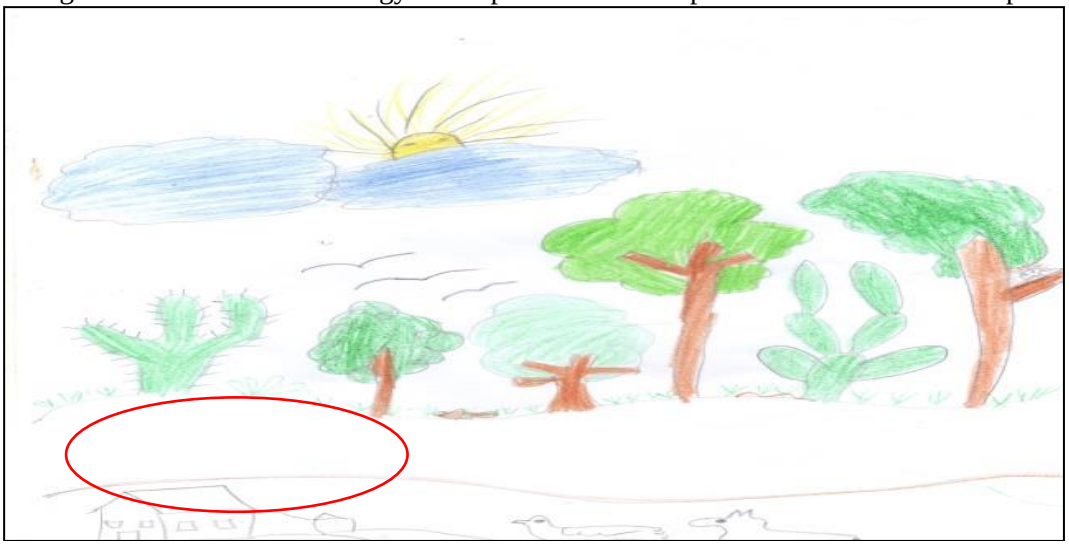
In this sense, in the bulge of this study, it is understood that "mental maps in environmental perception, should not be mere cartographic products, but to communicate, interpret and imagine environmental knowledge. (Oliveira, 2006. p., 36).

Figure 5: Mental map with a close connection of the caatinga as a concept of place.



In addition to the relationship of place, the representation of the rainwater harvesting system (Figure 6), the cistern that is quite common in the researched location, stands out. The rainwater harvesting system's relationship favors the locality inhabitants with better living conditions, an exciting element represented in the mental map above.

Figure 6: The social technology of the plate cistern is represented in the mental map.



After building the mental maps, the participants presented their productions and assembled a panel of various environmental perceptions of the caatinga biome. Therefore, at that moment, there was an exchange of experiences and knowledge of the people researched. Each subject had the opportunity to talk about their mental map and listen to other subjects and their perceptions and senses.

After forming two groups called Gravatá and the other Macambira, the teams answered eight but the Caatinga and agricultural issues' transformations in this activity.

In this context, the Macambira team, which caused the Caatinga's transformations, lacked knowledge of the population, the use of machines, and the burning. On the one hand, the team points out that these transformations were terrible because they caused the extinction of animals, trees, and consequently causing drought. However, the group also mentioned that it was necessary to destroy part of the Caatinga to plant human consumption.

Regarding agricultural issues, the team mentioned above answered that they prepare the land by fertilizing and that currently, labor has been replaced by machines. Besides, for the Macambira team, agriculture modified the Caatinga due to the deforestation process without thinking about future generations and the effects of these anthropogenic actions. Because of this issue, it is important to analyze that "[...] the socio-environmental implications caused by productive activities also include an analysis of the risks that these activities may suffer due to the modifications caused in natural systems. (Evangelista, 2011, p. 6).

In turn, the Gravatá team asked if there was any difference in the Caatinga past-present, answered that "the caatinga from before was preserved, the farmers did not deforest. There were many trees, and so on it rained more, unlike today". It is noticeable that the first team associate's deforestation with man; the second team, the figure of the farmer appeared; however, all the two teams emphasized that the problem of drought is associated with the Caatinga's deforestation in the locality, represented in mental maps.

It is interesting to emphasize that the plantation process is very present in the locality of the research. Because of divisions of the properties, especially inheritances, it contributes to increased intensive land use. For survival reasons, forces the owners to exert more pressure on the Caatinga (Evangelista, 2011, p.7).

According to the actors researched, these social and environmental implications caused by productive activities have interfered with the locality climate. Because the Caatinga 'locality climate is responsible for the prolonged drought, this was scored as the agricultural obstacle mainly of *Manihot esculenta*, *Phaseolus vulgarise Zeamays*.

The research location's agricultural landscape is based mainly on subsistence agriculture with the production of vegetable gardens. However, the cattle-raising exceeds the agricultural sector because deforesting the rural area by planting grass for cattle raising is a very present action in this study's location.

Therefore, it is essential to point out that this study's main objective is not to point out that the social subjects researched are correct or wrong concerning the caatinga biome's perceptions. Instead of finding and understanding the symbols attributed and for this purpose, analyze the relations of place and experiences in the group's mental maps.

3. Final Considerations

Study the actors that make up the Association's activities is to understand the gender relations present, the perceptions and senses attributed to Caatinga with the concept of place and the locality's agricultural production. The action plan elaboration must be imbricated with these analyses, results collected through the diagnosis techniques.

Regarding education in non-school spaces, non-formal Environmental Education comprises an opportunity to work on concepts, perceptions, and knowledge related to environmental issues without being limited to school space. It brings together other social actors, such as the Community Association members located in Bahia's semi-arid region, Conceição do Coité-BA.

Thus, thinking about Environmental Education actions in non-school spaces in the context of Field Education consists of analyzing the field itself as a possibility to reflect and act in this reality in a critical manner. It requires observing the social context and analyzing its possible conflicts and potentiality.

In this way, the environment contributes to developing perceptions related to the ways of life and experiences of social actors who live and reproduce their lives in the field. The caatinga biome's perception engages in this discussion from understanding the meanings assigned, transposing the concept of Caatinga as a "white forest.".

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