INNOVARE JOURNAL OF EDUCATION

Vol 9, Issue 4, 2021

ISSN: 2347-5528

Research Article

TEACHING IN NON-FORMAL SPACES OF LEARNING IN SÃO GONÇALO- RJ-BRAZIL: A CONSTRUCTION OF GEOGRAPHICAL KNOWLEDGE

ANA CLAUDIA RAMOS SACRAMENTO[1]*, GUILHERME FREITAS HARMUT BEHM[2]

[1]Departament of Geography-State University of Rio de Janeiro, Faculty of Teacher Training Education, Brazil

[2] State Secretariat of Education of the State of Rio de Janeiro, Brazil

***Email: anaclaudia.sacramento@hotmail.com**

Received: 17 May 2021, Revised and Accepted: 17 June 2021

ABSTRACT

The non-formal spaces of learning have promoted significant experiences to think the teaching of Geography and the spacial understanding of the city. This work has the aims to analyze the importance of spatial understanding of two non-formal spaces located in the municipality of São Gonçalo–RJ-Brazil: the Settlement Farm Engenho Novo–Girassol Site and the Climatological Experimental Station of the State University of Rio de Janeiro. These spaces are visited by students of two public school located in São Gonçalo–RJ-Brazil. The activities guide was built thus to organize the idea of watching, describe, and understanding spaces by students. With the results, the research concludes that the visit to these spaces – as a form of pedagogical didactics - can arouse in students the curiosity, inquiry and the sense of the importance of studying the contents in practice.

Keywords: Non-formal space, Geography, São Gonçalo, Concepts, Didactic of Geography.

DOI: https://dx.doi.org/10.22159/ijoe.2021v9i4.42088. Journal homepage: https://innovareacademics.in/journals/index.php/ijoe

INTRODUCTION

We have lived every day the concern of how to work the curricular concepts with the students in the elementary school. As one of the purposes of teaching, the teacher is concerned with inciting the "Knowing to understand and analyze" of the different phenomena in other geographical scales in the teaching of Geography. This situation occurs because the professional recognizes the relevance of students learning these values to understand the world in a scientific form.

This task, according to Cavalcanti (2011), provided to think how to build knowledge – geographical knowledge – with students, for they are able to go beyond a simple understanding of the geographical space, the landscape or the city. Sacramento (2017) reports the importance of thinking about the geographical concepts and contents as part of the process of learning Geography by the students as a form to understand the phenomena spatialized in a certain space. Thus, the concepts and contents have a relevant pedagogical role in the development of learning by the students because they help them "to think outside the box" in regarding the geographical concepts about certain objects and places, in order to improve the scientific perception of understanding the world where we live.

To teach for the students, it is necessary also to build pedagogical -didactical forms in class to answer "what?", "Why?" and "how to teach?" Geography in the classroom. This is, in part, the form of that elementary school deals with these questions linked to the geographical knowledge to structure the methodology in class to apply the curricular concepts and contents critically.

Outside the classroom, the didactic activities help the work of the teacher to develop interpretations about geographical concepts, contents, and others, in order to create teaching means focused on dynamics related to local studies of the spatialized phenomena.

It is important to enhance the understanding of the geographical space is beyond the school space and the methodological activities developing by teachers in non-school spaces. One of the possibilities to think methodological how to teach is from non-formal spaces, which were established as didactic strategies in some public schools in the municipality of São Gonçalo-RJ.

Thus, the non-formal spaces of learning are those in which educational practices occur in an organized manner and outside school. Their spaces encourage other's spaces and their "functions," "forms," and "contents" because they are structured according to the objectives which were thought to intervene educatively or not.

Each space was chosen to build the knowledge has its own sign, symbol and different structure (Lefebvre, 2001). Thus, to understand the non-formal spaces is understanding the established and built dynamics in search of to know and learning about the geographical contents and concepts which materialize in those non-formal spaces.

The teaching of Geography produces practices in order to mobilize students to an understanding of different spaces is contemplate the analysis of the phenomena organized and structured in the curricular contents brought from the classroom.

This article presents data from the study realized by the advisory projects of research – both financed by Research Support Foundation of the State of Rio de Janeiro – Support to research AQ1 "Teaching Pedagogical Practices in Geography and curricular texts and policies in the states of Rio de Janeiro and Goiás." The first project has a very important theme to the students in elementary school: understanding of the city. The second one presents the different possibilities of didactic building. Therefore, different didactic-pedagogical actions were constructed through workshops, lectures, fieldwork, teaching materials and among others, from the theme "City and the different phenomena, concepts and geographical contents."

Thus, this research is structured in this way: In the first moment, a presentation of a literature review about non-formal spaces and Geography teaching to understand the city, in this case, São Gonçalo city. Then, from a methodological point of view, present the analysis of the stages of development of non-formal activities. At last, will be presented the analyses about different spaces visited and studied; what are their spatialities and the construction of concepts and geographical content with students and ending the article as a final reflection critically evaluates the results of the visit to these spaces that arouse in students the question and the importance of studying the contents *in loco.*

REVIEW OF THE RELATED LITERATURE

There are different ways to build knowledge. During the research project, we seek with the pedagogical practices of

teachers to create a set of didactics proposals that can enhance the spatial understanding experienced by students about the city of São Gonçalo.

Cavalcanti (2012) points out that the city can be allowed to several individual understanding about its own environment because the city presents itself according to a set of phenomena organized spatially in the production of geographical space. Therefore, each part of the city and its objects has shapes and structures producing meaning, signs, and unique relations with the experienced laces for dynamic issues of society.

According to Sacramento, Campos, Sanches, & Silva (2016), studying the city as a spatial organization permits the students, learn concepts to understand geographic space, so analyze their own spatiality, as well as have spatial awareness of social and physical-natural dynamics in the understanding that cities have contradictories uneven shapes. Thus, the phenomena are worked to produce meaning to the form, content, structure and function that each place establishes with the city.

According to Lefebvre (2001), learning to understand the city is to analyze its several functionalities and forms; with this, it is a way to be able to identify through its different landscapes its functions and structures. Thus, we can say that the city becomes unique because its objects and their relations with space are unique. Therefore, thinking about activities that promote the dynamics of the city is to reflect on its uses that are constantly transformed with the need of 0society in a given time-space.

São Gonçalo has over 1.000.000 inhabitants and, because of this, is the second-largest populous municipality in the state and the second-largest Electoral College. As a built space formed for many socioeconomic contradictions, the city of São Gonçalo presents many problems like, for example, infrastructure. Among these problems are local difficulties such as (a) unpaved streets or potholes, (b) lack of sanitation, (c) garbage collection without a fixed schedule in some neighborhoods. The municipality also presents intense traffic flow in road 101 and in road 106 – (a) with traffic jams several times. (b) incipient public transportation for the population.

Another problem that affects a lot in the daily life of the city is urban violence – (a) neighborhoods controlled by drug trafficking; (b) by criminal factions and militia; etc. The social impacts are diverse such as lack of work and adequate housing caused because sometimes the individual occupies environmental risk areas since the city suffers from floods and residents lost their goods and, sometimes, their own house.

The neighborhood representations and their different contexts also is a feature of place very complex to understand, because as some are focused on aspects of the low-income residence, others with commercial and residential characteristics of building condominiums; others with more commercial and service characteristics; others with industrial dynamics; others with more rural dynamics; others with farms in urban areas; others with industrial, mixed residential and museum areas and, thus, we can understand the features that the city presents to us.

Teaching Geography from non-formal spaces is understand work in places outside the school institution, which means, do a spatial reading of contents developed in the classroom from out of it. According to Falcão (2009), the form of teaching empowers "opening means to apprehend" the knowledge about the world that surrounds the subject and their social relations, adding an interactive aspect during the educative process. To the author, activities in non-formal spaces enable to build knowledge of concepts and contents taught in the classroom as well as the phenomena that manifest themselves beyond those studied.

By choosing the local that will be analyzed and experienced by students, knowledge inserted in this space allow a moment of interaction, not only the place itself but the relation established between students in the dynamic "about" and "in" space.

These spaces are inside a context, a logic of production of geographical space, and, because of that, cannot be treated isolated but critically observed as the objects are organized in that place. Therefore, approach some non-formal spaces to think about Geography's contents is also to allow the development of action of getting to know the city and its different forms and contents in students (Jacobucci, 2008).

Each one of them has its social function because the objectives are different from each other – their source, organization, structure, form, actions, dimensions, uses, etc. – and requires interpretations to analyze how these spatialities are constituted in order to understand their role within the city of São Gonçalo.

Falcão (2009) highlights the importance of non-formal spaces related to museums but bringing his ideas to dialogue in a simple way. The different spaces (a) can give access to new and different languages and technologies, as well as values and forms of scientific and cultural knowledge or not, depends on the visited space. (b) They grant the different institutions or non-institutions with which they are evaluated by a bias guided by the purpose of conserving, studying, exposing and valuing the material testimonies of man and his environment for education and leisure in society. (c) They have several thematic characteristics that vary according to the objective.

OBJECTIVE

The objective of this work is to analyze the importance of spatial understanding of two non-formal spaces located in the municipality of São Gonçalo – RJ, the Settlement Farm Engenho Novo – Girassol Site and the Climatological Experimental Station of the University of the State of Rio de Janeiro, as spaces capable of enhancing the production of geographical knowledge. The students of the high school of the State School Moacyr Meirelles Padilha and the State School Frederico Ozanam in 2018 visited this places.

RESEARCH QUESTIONS

Thus, this work is based on the following questions:

(i) What are the best strategies of teaching to encourage the learning of students in elementary school?

(ii) How to think in critical concepts and contents to developing the understanding about geographical space and other relevant concepts in the students?

HYPOTHESES

Doing the field visit on-site allows students to learn and experience the contents worked in the classroom.

METHODOLOGY

Understanding the importance of the building of knowledge between non-formal spaces and contents and concepts of Geography's teaching taught in non-formal spaces is dialoguing with a teaching methodology that allows the understanding of different spaces and their contexts.

The non-formal spaces of learning have promoted meaningful experiences to think about the teaching of Geography and spatial understanding of the city. Organizing all planning process to the visit to these spaces is work with the geographical contents and concepts to build meaningful learnings from the practical activities to understand *in loco* the spatialized phenomena. For these activities proposal it is important to consider that:

a) Developing suitable planning, in other words, check dates, schedules, availability of place (scheduling), if there is any payment, the displacement – as the transportation to use if space has guide tour, necessary material.

I. For the activity at Girassol Site, the teacher contacted, by phone, the owner of the site to check suitable date and time; visits do not have payment; space has guide tour; the students of high school went off public transportation until visit place; the material used was the script of activities;

II. Regarding the Climatological Station, the visit was scheduled by e-mail, disclosed in the site of the

Geosciences Laboratory to check the appropriate day and time; visits are not paid and are guided; the school rented a bus for the students.

b) Thinking in different to articulating learning and enhancing what can be worked within spaces. Therefore, it is important to make a prior visit and study the place.

I. The visit was made in both spaces and, from this, the activities scripts are structured to mediate the organized concepts and contents in the classroom.

c) Know how to elaborate activities, which involve what was taught in class or what will be taught.

I. The organization of activities script, which approach spaces to be explored during the visit based on the concepts and contents, taught in the classroom.

d) Reflecting about a form of learning of contents and concepts

I. The activities were designed from the theme organization for a conceptual discussion about the understanding of the place to be visited.

II. In addition, from that, were developed, with the students the forms of observation, description, and analyses of phenomena experienced in the place in question.

e) Understand that non-formal spaces are spaces for learning. Therefore the teacher needs to perform activities with their objectives.

I. Theme: Family farming, rural space, landscape, food sovereignty, real estate speculation for high school;

II. Theme: Climate, risk, vulnerability, the weather, the weather and different environments impacts for the elementary school.

The activities were divided into three parts: (i) one in the classroom in order to diagnose and form the conceptual knowledge of student about the discussion of Agriculture in Brazil. Thus, the current impacts with the reform and modernization of the field were taken into account, who are the subjects resistant to the whole process of capital. (ii) Another part was the visit to the site with the aim of identifying the invisible and subordinate social practices on the metropolitan scale. Therefore, they were able to know their agricultural practices and ways of being and being in space; how they identified and fostered the struggle for both social and territorial recognition so that we can rethink the subjects and the meanings that should act in making the city.

Finally, (iii) the other part was to develop final activities in the classroom as a finalization of the theme. In relation to the Climatological Station, the discussions were based on the theme of Climate and Weather: risk and vulnerability with the expository dialogue class and games in the classroom; visit the site and then a closure at the school.

The participant activities

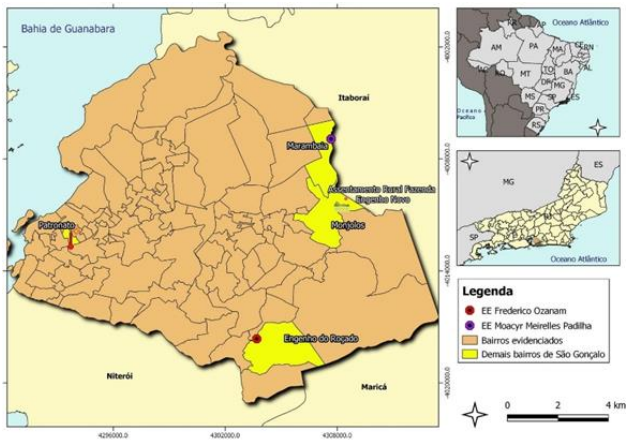
In the 2nd year classes of high school (2001, 2002, 2003 and 2004), a total sum of 50 (fifty) students of State College Doctor Moacyr Meirelles Padilha. The students developed activities inside the Girassol Site, which belongs to Mr. Onofre, located at Settlement Farm Engenho Novo in Monjolos-SG-RJ in June 2018. Classes of 8th and 9th years of Elementary School with a total sum of 40 (forty) students developed activities at Climatological Experimental Station in November 2018 at the State University of Rio de Janeiro on the campus of the faculty of teacher training education in São Gonçalo.

Visited places

The Settlement Farm Engenho Novo is located in Monjolos – SG – RJ. It was part of one of the largest landowners in the area, it was bought by the Baron of São Gonçalo, Mr. Belarmino Ricardo Siqueira in 1830; the settlement produced sugar cane, orange and pineapple. In 1943 the farm was sold to José Baltazar Cerrado who returned his production to agriculture in the area. In 1989 was sold to a businessman who began removals from sharecroppers and tenants, causing land conflicts in the area. From the State Decree 16.492, the area becomes a public utility and, in 1993, the provisional possession of the property took place.

Nowadays, it has about 150 families that work or live on the lands that were created from the breakup of the farm of the same name, in 1993, by the Institute of Land and Cartography of the State of Rio de Janeiro. According to the Institute of Land and Cartography of the State of Rio de Janeiro, the Settlement Farm Engenho Novo has an area of 1828.580ac and has cattle farming (dairy and beef), goat farming (dairy), olive growing (okra, corn, gherkin, and cassava), fruit growing (banana, mango, orange, mandarin, lemon, persimmon, etc.) and other crops (sugar cane) as main activities developed.

The Climatological Experimental Station created in 2005 is located within the campus of the State University of Rio de Janeiro and carries out constant monitoring of the municipality's climate, identifying the rainiest periods and also the average temperature and incorporating them into studies on floods and movements of mass by the team of researchers from the Geosciences Laboratory. Figure 1 presents the location of the two areas visited that are located in the Patronato neighborhood and the other in the Monjolos neighborhood in São Gonçalo.



Source: Organized by Alan Silva (2020)

Fig. 1: Location of research schools and non-formal spaces

RESULTS AND DISCUSSION

The proposed activities seek to discuss the importance of working with concepts and geographical contents in non-formal environments chosen from the didactic organization of the teacher who developed in classes questioning with his students about these themes: Family farming and climate issues.

Cavalcanti (2011) attends us to understand how working the different geographical concepts in order to develop in the students the intellectual capacity to think geographically. Therefore, knowledge building happens from the moment students learning the meaning of concepts and be able to recontextualize in different situations. For this, the teacher needs to develop didactic mediations that enhance "knowing how to use" and question the signs and symbols that are reified in the landscape. Thus, at this moment, the development of the phenomena perceived during the following two visits will be worked on.

Settlement Farm Engenho Novo Girassol Site

Why developing activity in this settlement? What are the meanings of understanding what happens in this space and how the landscape is configured? What is the importance of understanding family farming, especially in Brazil? How to use the concept of landscape to understand the functioning of society and spatial dynamics? These were some questions taught not only in class but also in the field to understand some concepts and geographical contents worked in the classroom.

The visit aimed to depict peri-urban family farming and its importance for food autonomy for the region's residents. This is because capitalist development, being contradictory, generates marks of such a condition in the landscape that can be identified. Regarding the specific objectives of the visit, the

study presents (a) understanding the socio-spatial dynamics of the place; (b) identify the main activities carried out; (c) understand what a settlement represents; (d) to analyze the struggles against the advance of real estate speculation in the area, and (e) to understand how the marks left in the landscape can give us clues on how to understand the city and its dynamics.

The expository classes discussed were organized with the dynamics of promoting the following questions:

a) What is the meaning of Family Farming?

b) How to think about the dynamic countryside/city in Brazil and São Gonçalo?

c) What are these landscapes that are expressed in the production of a family agrarian space?

The initial provocations were to seek the construction of three concepts of the geographic field to be structured: Family Farming, rural geographic space, and the production materialized in the landscape and roughness. These concepts guided the classes that mobilized other geographical concepts such as food sovereignty, real estate speculation and peri-urban agriculture.

Another depiction is the peri-urban space that is a place where rural and urban activities are mixing up. Thus, there is not a delimitation of their physical or social territorial limits of the relation between urban and rural space. Thus, the neighborhood where the settlement is located is in this relation of a peri-urban space.

Throughout the classes, the construction of these concepts led students to reflect on how the rural space manifests itself and from what dynamic? It is known that the concept of rural space is related to the space destined to activities linked to land, to the agricultural and non-agricultural form of working, as well as to the way of life and technological standards (Rosas, 2014). The problematization of this concept mobilizes the question: Why study this space? In addition to these forms of land appropriation, they also establish ways of using them. Thus, when understanding the Brazilian rural space, the ways of working are questioned.

Family farming is a way of cultivating land and rural production with management and labor generally in the vast majority of a family nucleus. For this reason, it is characterized by production on small plots of land; the family is the owner, manager and, at the same time, responsible for the production and marketing of its products. The production process of family farming differs from agribusiness farming, especially in a country where food security is guaranteed by the former.

This discussion with students is essential to establish the types of production relationships that are established by these spaces. Family farmers are often made impossible by the actions of different governments - at the federal, state and municipal levels - as these spaces are sometimes disputed in struggles for the right to land.

Thus, aiming to leverage the understanding of the production of space in the city of São Gonçalo and its relationship with time, in the sense of social struggles for the right to land, we decided to introduce students to the concepts of settlement, peri-urban agriculture and roughness.

Following the order established in classroom practice, we will address the concept of settlement here and then move forward in understanding the importance of peri-urban agriculture for the region's food security. In addition, students will be studied how these activities leave their mark on the landscape, thus expressing what type of social relation of production it represents, establishing differences with other social relations of production and their marks on the landscape.

In view of this dynamic presented, we follow the understanding of family farming, which stands out as a way of life for men and women who resist over time the processes of capital advance. They seek to survive by trying to maintain themselves through solidarity and collaboration, out of step with the competitive environment. Despite this, family farming is subordinate to large enterprises that operate in the agribusiness sector. Thus, the organization of associations of settlers and resettlers has the possibility to enhance their productive capacities.

A settlement can be understood as a set of agricultural units independent from each other installed by the National Institute of Colonization and Agrarian Reform. Originally, a settlement was a rural property (large estate) that belonged to a single owner (Landowners) and each one was called plots, lots or glebes. It was handed over by the National Institute of Colonization and Agrarian Reform to a family without economic conditions to acquire and maintain a rural property by other means or to families that were displaced from their homes due to numerous adverse factors.

The amount of settlement depends on the land's capacity to accommodate and support settled families. The size and location of each lot are determined by the productive conditions that the location offers. The functioning of a settlement depends on the family workforce itself, in which the settlers who receive the lot commit to living on their lots and exploit them for their own livelihood. Agrarian Reform settlers can have access to land credits policies, rural technical assistance, infrastructure and other benefits to support the development of settled families. Until they have the deed of the lot, the settlers and the land received will be linked to the National Institute of Colonization and Agrarian Reform; however, without having possession of the deed of the lot in their name, the settlers will not be able to sell, rent, donate, lease or lend their land to third parties.

In this sense, the settlements have characteristics similar to family farming. They become practically a condition of the other and, if we analyze in more depth, they present themselves as "non-capitalist" ways of life. In this way, there is no more valuable production. That is the production relations established there are not based on the exploitation of man by man through excess work time. Thus, they represent a resistance to the spatial advance of the capitalist mode of production. We see that the landscapes of these areas have "roughness," which expresses a dialectic of time that materializes the different divisions of work in a successive, overlapping and simultaneous way, according to Silva (2011).

The advance in the concept of roughness leads us to understand space as the unequal accumulation of times. This fact conditions the understanding that the production (of space) in the city of São Gonçalo leads students to reflect on the importance of being the authors of their own history and that they are able to concretely intervene in the reality of the city where they live. However, in order to do this critically and exercise full citizenship, it is necessary to appropriate the school's geographical knowledge and visualize it in loco. For this reason, the visit to Girassol Site was extremely important so that students could understand the spatial occupations and the forms of production carried out by rural workers.

During the route from school to the place, the relations between the rural and the urban in the District of Monjolos (where the site is located) was explained to students, since it is perceived in several urban activities not linked to agricultural production materialized in the gonçalense landscape peri-urban The students along the route questioned the difficulty of differentiating the rural and the urban, when they arrived at the site, as the landscape after a certain point did not have so many commercial activities. One of the issues observed along the way is also related to real estate speculation.

Azevedo and Godoy (2012) argue that even though it is considered an area of rural use, the relation between the rural and urban areas is noticeable in the Monjolos area since it is close to the urban center of the municipality.

With the arrival of students in the space, they began to understand the logic of family farming. The reception of one of the workers at the site mobilized the initial relationship of the "fight" waged by the State Government of Rio de Janeiro with the Municipality of São Gonçalo for the recognition of the land. This first moment showed the discussion about the struggle for land and the landless movement, being the first moment of the stop at the central entrance of the site.

In the second moment, the students walked to the place where the cultivation is concentrated and were encouraged to analyze it, based on the contents on the dynamics of the space discussed in the classroom. Therefore, they had to reflect on the processes that were taking place on the site, the impacts and the logic of being a small farmer in our country. The questions they elaborated on were diverse, for example,

i. How to think, then, the importance of the settlement for the municipality?

ii. What are their main activities?

iii. To whom do they sell their products and where do they sell to?

iv. Do they still feel threatened by having problems with the government?

During the moment of response, the worker highlighted the lack of incentive on the part of the government to obtain resources for the development of work within the farm and the site. We are aware of the small investment made by Governments that prioritize agribusiness. Small farmers are fundamental to the food security of our country because, according to data from the Brazilian Agricultural Research Corporation (2014), they showed that 70% of production is destined for local urban populations.

In the cultivation area, the students observed the different types of plantations and animals, such as horses and oxen. According to the worker, the main productive activities are olive growing (okra, corn, gherkin, cassava), fruit growing (banana, mango, orange, tangerine and others), cattle raising (dairy and beef), among others. This information made it possible to understand the dynamics of the work process that does not actually need sophisticated machinery but good partnerships to know how to use the land in the best way. So, he told us about partnerships with universities and NGOs that help them improve production. In the case of the Girassol Site, during the course of the visit, the production of vegetables was more evident, as seen in figure 2.

Source: Sacramento (2018)

Fig. 2: Girassol Site - Settlement Farm Engenho Novo

The students also asked about income conditions, how they transport and sell to the supply center and how to sell at the door of the site. He stressed that his economic activities are necessary for a city since the proximity can cheapen the cost of food and such space represented a resistance to the advancement of real estate speculation.

In this way, students also learned that each space has its social function since the objectives are different from each other- their origin, organization, structure, shape, actions, dimensions, uses and others - require interpretations to analyze how these spatialities are constituted in order to realize their role within the municipality of São Gonçalo.

Climatological experimental station of State University of Rio de Janeiro

During the classes of the 8th and 9th years that work with the theme of regional and global scales, the teacher enhanced the discussion about the climate and its conditions in the world and in Brazil. The central conceptual discussions were on the effects of human actions around the world, such as risk, vulnerability, climate, weather and different environmental impacts. The work was organized through dialogued expository classes, in which the teacher together with the fellows worked with the concepts and developed a game to develop the student's cognitive abilities. From the dimension of thinking about geographical climate analysis, students were able to understand that climatic phenomena have an impact on the organization and structuring of landscapes, as well as geographical space in different dimensions.

In São Gonçalo, there is the Climatological Experimental Station structured and managed by the Geosciences Laboratory of the State University of Rio de Janeiro, the campus of the College of Teacher Education. The station has existed since 2005 with the aim of popularizing and disseminating technical knowledge about the dynamics of atmospheric weather and the notions of geographical Climatology. Thus, the spatialization of atmospheric phenomena, through the monitoring of climatic data combined with the mass movements occurring in the municipality, can become more accessible to the public. Space has a set of instruments that enable researchers to have important data to understand the climate and the weather of São Gonçalo.

It is open for visitation with scheduling for students, technicians and other professionals interested in better understanding the devices for geographical analysis of the climate. In addition, within the Geosciences Laboratory, the interns show monitoring data and show the correlation with the natural and social risks that affect Gonçalo society, such as floods, mass movement, etc.

Source: Sacramento (2018)

Fig. 3: Climatological station

In the first stage of the visit, students get to know the campus spaces and then have a lecture on the State University of Rio de Janeiro. In the second stage, they go to the Climatology Station to get to know the devices and understand the performance of each one of them for data collection. Students learn, as Bertolino, Costa, Bertolino, & Fialho (2007), that the data obtained by the station presents the climate of the Aw type region in the Köppen classification. The driest period occurs between the months of May and October, with monthly rainfall totals less than 100 mm. The interns explain the issue of temperature and two rainfall indexes. They highlight the relationship of the data for spatial analysis of the municipality,

as well as the equipment, according to Bertolino et al. (2018), heliograph, evaporation tank, rain gauge, rain gauge, anemometer and three geothermometers in different types of depth (11, 21 and 31 cm); a weather shelter containing a wet-bulb thermometer; dry bulb thermometer; maximum temperature thermometer; minimum temperature thermometer; Piché evaporimeter and barometer; as shown in figure 3. The automated climatological station (MAWS) with temperature sensor; rain, wind, dew point, relative humidity and atmospheric pressure sensor.

When explaining the function of each device, students learn how the data collected helps to assess the main risks that may occur within the São Gonçalo space and to articulate with the other scales. Thus, discussions about changes in the landscape with floods and landslides cause both natural and social impacts and occur at other scales worldwide.

At the Geosciences Laboratory, students talk to interns about the relationship between urban and environmental problems in São Gonçalo through the contents of climatology and pedology to explain the influence of floods and landslides (figure 4). From that, they make correlations of floods in days of very heavy rains with the other scales.

Source: Sacramento (2018)

Fig. 4: Geosciences laboratory

From the conceptual discussions dialogued with the interns, the students developed some activities with the objective of bringing, through drawings created by pencil and ink made of sediment on cardboards, the different instruments present in the climatological station. In addition, they described their respective functions and the importance of a station.

At school, the importance of this space for the municipality of São Gonçalo was discussed with students. It also addressed the issue of the university campus itself as a scientific space, the instruments and devices for understanding climate data and knowing how to analyze these data that allow analyzing the risks and preventions that are developed in risk areas.

CONCLUSION

The Practices aimed at the teaching of Geography are often presented as an alternative to an existing order. Rethinking the meaning of the place within school practice is a challenge since access to new realities means going beyond the walls and looking for new ways to develop the spatial reading of the city. Thus, carrying out activities in non-formal spaces in São Gonçalo put a challenge due to the precariousness of the public school, the lack of infrastructure and funding for other activities.

Studying the different contents in the spaces of this city and understanding its forms, functions and structures is to reflect the role that the discipline can offer when the knowledge is thought and organized for meaningful learning of the students. The work done by the teachers in the classroom, explaining the concepts and contents, enabled the understanding of the phenomena that occurred in these spaces that are part of the city of São Gonçalo.

Girassol Site inside the Settlement Farm Engenho Novo promoted students to reflect on the meaning of a type of agriculture in the country, its characteristic, its production of labor and products. By discussing with the workers about what they develop on the site, they were able to understand the dynamics that occurred in this space.

Thus, it is evident that teaching physical-natural content articulated with the work done by students at the Climatological Experimental Station develops the major understanding and analysis in a precise way of spatial processes and their constant changes. The study, through readings and analysis of data from this place, allowed researchers to have information about the climate of the city of São Gonçalo. In this way, when visiting the place, the students got to know the devices, as well as understanding their functions and importance in thinking about the geographical analysis of the local climate.

Therefore, practical activities in non-formal spaces are a possibility of pedagogical intervention that allows students to understand the contents and concepts learned from the place, but to know other spaces that are not from the school, but "from" and "in" the city.

ACKNOWLEDGEMENT

Research Support Foundation of the State of Rio de Janeiro (Faperj), State School Moacyr Meirelles Padilha and State School Frederico Ozanam.

AUTHOR'S CONTRIBUTIONS

Both the authors have contributed equally.

CONFLICT OF INTEREST

No conflict

FUNDING SOURCE

Research Support Foundation of the State of Rio de Janeiro (Faperj).

REFERENCES

- Azevedo, C. V. De., & Godoy, K. E. (2012). Engenho Novo Farm: The relations of belonging of a patrimony and the community in its surroundings. In: *XV CISO - North and Northeast Meeting of Social Sciences Pré-Alas Brasil*, Teresina: Federal University of Piauí, s/p.
- Bertolino, A. V. F., Costa, A. R. C., Bertolino, L. C., & Fialho, E. S. A. (2007). Analysis of climatological dynamics in the municipality of São Gonçalo-RJ - triennium 2004 - 2007. *Tamoios Magazine, 3*(2), 1-13. doi:10.12957/tamoios.2007.624
- Bertolino, A. V. F., Bertolino, L. C., Sacramento, A. C. R., Kede, M. L. F. M, Oliveira, A. C. B., & Delazeri, E. M (2018). The contents of physical geography for basic education-importance of using as a tool the monitoring of climatological experimental station in the understanding of the conditions of mass movements. In E. M. B. de. Morais, A. O. Alves, & V. O. R. Ascenção (Eds.), *Contributions of Physical Geography to the teaching of Geography* (pp. 79-99). Goiânia: C&A Alfa of communication.
- Brazilian Agricultural Research Corporation. (2014). AIAF 14 Family Farming in Brazil. Retrieved from https://www.embrapa.br/aiaf-14-agricultura-familiar-no-brasil
- Cavalcanti, L. S. (2011). Teaching Geography for the autonomy of thought: The challenge of overcoming

dualisms by critical theoretical thinking. *Magazine of ANPEGE*, *7*(1), 179-190. doi: 10.5418/RA2011.0701. 0016

- Cavalcanti, L. S. (2012). *School geography and the city: Essays on teaching Geography for everyday urban life* (4th. ed.). Campinas- SP: Papirus Publisher.
- Falcão, A. (2009). *Museum and school*: Formal and non-formal education. *Brasília: Ministry of Education and Culture*, *3*, 10-21. Retrieved from http://portaldoprofessor.mec.gov.br/storage/materiais/0000012191.pdf.
- Jacobucci, D. F. C. (2008). Contributions of non-formal spaces in education to scientific cultural formation. In *extension, Uberlândia, 7*(1), 56-57. Retrieved from: http://www.seer.ufu.br/index.php/revextensao/article/view/20390.
- Lefebvre, H. (2001). *The right to the city*. São Paulo: Centauro.
- Rosas, C. A. R. F. (2014). Rural space and Geography: Diferente approaches to the country-city relationship. Divers *@! Interdisciplinary Electronic Journal / Matinhos*, 7 (1), 68-80. doi:10.5380diver.v7il.39590
- Sacramento, A. C. R., Campos, A. M., Sanches, F, & Silva, J. J. P. (2016). Geographic education and the study of the city and the urban in São Gonçalo-RJ: learning activities for teachers and students. *Tamoios Magazine (Online), 12*(1), 84-100. doi:10.12957/tamoios.2016.21441
- Sacramento, A. C. R. (2017). *Teaching Geography and the city of São Gonçalo*. 1ed.Seropédica: EDUR.
- Silva, R. A. S. da (2011). *Spaces-times, roughness and territoriality in the capitalist city:* A study from the reality of the Gardner Caiçaras housing complex, Cidade Alta de Juiz de Fora - MG. 125p. Graduation monograph. Department of Geosciences - Geography Course., Federal University of Juiz de Fora.