

# International Journal of Human Sciences Research

## SAVANNAH BIOME AND SCHOOL: HOW THEY ARE CONTEXTUALIZED IN A CURRENT EDUCATIONAL PERSPECTIVE

---

*Viviane Vasconcelos Chaves*

Degree in Biological Sciences - UNEB;  
Master's student in Botany - UFV

*Núbia da Silva*

Master in Biodiversity, Professor  
at: Universidade do Estado da Bahia- UNEB

*Adilson Alves Costa*

PhD in Soil Science, Agronomist, Professor  
at: Universidade do Estado da Bahia- UNEB

All content in this magazine is licensed under a Creative Commons Attribution License. Attribution-Non-Commercial-Non-Derivatives 4.0 International (CC BY-NC-ND 4.0).



**Abstract:** The Savannah is the target of unbridled anthropic exploitation of natural resources and consequently of concern for sustainability. The aim of this study was to analyze how the Savannah is approached at school. Eight public schools participated in the research involving: Document analysis of the BNCC, PCN's and PPP's, Survey of ten Science and Geography books and the preparation of paradidactic material in booklet format. It was found that the Savannah is absent in the referred documents and in the textbooks they present a superficial approach. Therefore, it is necessary for the school to adopt different strategies, making use of paradidactic resources such as comics, to enrich classes, with interdisciplinarity and environmental education.

**Keywords:** Teaching; Environmental education; Sciences.

## INTRODUCTION

Commonly known in the literature as the cradle of waters in Brazil, for being included in the hydrographic basins with the largest territorial extension, presenting well-defined climatic conditions, the Savannah is the second largest Biome in the country, with a unique biodiversity, added to the favorable conditions for the large-scale agricultural development (ALVES; ROSA, 2019).

Despite all its richness and importance, this biome is considered one of the hotspots, that is, it is included in the list of biomes that suffer the most degrading actions, resulting from human activities (BORGES; FERREIRA, 2018). Due to its intense degradative process, there is a need for projects related to the theme of the environment, environmental education, aimed above all at raising awareness of the use and conservation of the Savannah Biome.

In this sense, one of the suitable environments for such an approach are the educational spaces, especially the school.

Since this is where you have the opportunity to meet, learn, raise awareness and transmit information to environments other than the classroom, especially when it comes to children and adolescents (OLIVEIRA et al., 2020).

It is in this space that it is necessary to adopt materials and methodologies that allow a greater approximation with the contents, especially when related to the Savannah, in which the vast majority of literature adopted by schools, neglect what in fact must be placed in a contextualized way.

Although the textbook is one of the most accepted and used resources, this, in turn, must not be the only source of information, either for the teacher or the student. Due to its frequent use, it is noticed that most of the time it does not reflect good learning, because the contents are presented quite summarized, or even incomplete, limiting both the teacher and (ALVES; ROSA, 2019).

Speaking of content, the Atlantic Forest biome is well highlighted and emphasized, displaying more pages and information when compared to other biomes (BEZERRA; GOULART, 2013).

The vast majority of books often display content that is confused with other biomes such as the Caatinga, for example. There is a lack of correct information regarding the geographic distribution, correlation of the fauna and flora image with the texts (SIQUEIRA; SILVA, 2012). In this sense, the present work asks itself: the way in which the Savannah is approached in schools, from the use of textbooks, to the expository and practical classes, has helped in learning and led to an awareness of this theme in elementary school II ?

In this perspective, the objective of this research was to identify the way in which the Savannah biome is approached in schools based on document analysis and in science

and geography textbooks, and based on the diagnosis of weaknesses present in the didactic material, build a booklet in the form of comics as complementary material about the Savannah.

## **METHODOLOGY**

Research characterization and study area

The work is characterized as a descriptive research and document analysis. According to Gil (2008), the most significant characteristics of the descriptive research type is data collection, such as a questionnaire. The documentary is characterized by materials that have not yet been analyzed or that can still be redone according to the research objectives.

The work was carried out in three municipalities in the state of Bahia, more precisely in eight schools of the municipal education network, namely: four in Barreiras, three in Oliveira dos Brejinhos and one in Wanderley (Figure 1). The names of the schools were not disclosed for ethical reasons, it was decided to identify them using the terms School 1, School 2 and so on, as shown in (Table 1 and 2).

The research was divided into four stages: Presentation of the proposal and adherence of the participants, Analysis of the BNCC, PPP's of schools and PCN's of science and geography, Survey of data from 7th grade geography and science books and finally preparation and availability of paradidactic material (Gibi) containing missing information according to the analysis of the books adopted by the schools.

### **STEP 1- PRESENTATION OF THE PROPOSAL AND ADHESION OF THE PARTICIPANTS**

Initially, visits were made to public schools to present the research proposal to managers, but due to the Coronavirus pandemic, the

presentation was only possible through the media, in this case, via email and cell phone through the WhatsApp application. In which the research proposal was made available to be analyzed by the direction and teachers of science and geography of the seventh year. Those who agreed to participate in the research, the collaboration took place virtually, through informal conversations just to clarify some doubts.

### **STEP 2. ANALYSIS OF THE BNCC, PCN'S AND THE SCHOOLS' PPP REGARDING THE ENVIRONMENT THEME**

After acceptance by the Management that makes up the eight schools already described, they made the Pedagogical Political Project available. An analysis was made of the Thematic Axes of the PCN's document of natural sciences and geography, and of the Thematic Units of the BNCC, available on the MEC website and of the PPP's that were acquired through the schools. The analysis criteria for all documents were as follows: Is there space within these documents for addressing the Savannah biome? What are the guidelines for working on this topic in schools?

### **STEP 3. SURVEY OF DATA FROM 7TH GRADE GEOGRAPHY AND SCIENCE BOOKS**

The analysis of the books was carried out using the digital version, according to the guidelines provided by the schools regarding the books adopted in 2019 and 2020. The level of education chosen to compose this research was fundamental II, in which careful observations were made of the last two editions of science and geography books regarding the content referring to the Savannah Biome.

The analysis of textbooks was based on work done by Bezerra and Suess (2013) and

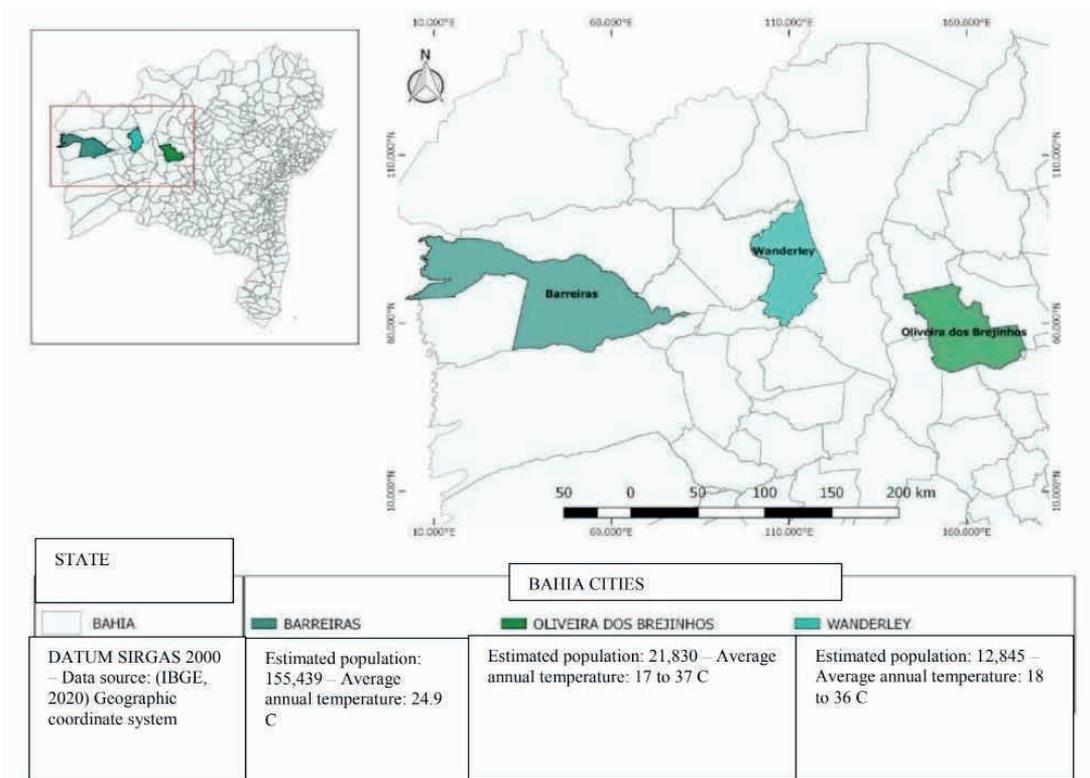


Figure 1 – Location figure delimiting the three municipalities that were the focus of the research: Barreiras; Oliveira de Breijinhos and Wanderley, belonging to the state of Bahia.

Elaborated by: GONZAGA, C. L (2021)

Data	School 1	School 2	School 3	School 4
Cities	Barreiras	Barreiras	Barreiras	Barreiras
Level of Teaching Organization	Elementary school II daytime and evening EJA	Daytime elementary school I and II	Elementary school II daytime and evening EJA	Elementary school II day
Enrolled	1.108	460	827	147

Data	School 5	School 6	School 7	School 8
Cities	O. dos Breijinhos	O. dos Breijinhos	O. dos Breijinhos	Wanderley
Level of Teaching Organization	Daytime Elementary School II and Evening EJA	Elementary School I and II daytime and evening EJA	Pre-School, Elementary I and II daytime	Elementary School I, II daytime and evening EJA
Enrolled	471	337	284	278

Table 1 and 2- Data from the eight schools that are the focus of this research regarding the level of schooling offered and the number of students enrolled in 2020.

Source: The Authors.

Oliveira et al., (2018) which presented the following criteria: Does the book address the topic? Does the book address more than one phytophysiology? Which? How is the Savannah Characterized? Are the images correlated with the text? Do animal and plant species have the popular and scientific name?; Does the book present the geographic distribution of this biome?; What types of illustrations does the book present (Figures, maps, tables, diagrams)?; Contents such as climate, soil, fire, environmental degradation, biodiversity and conservation are passed on in the correct (or wrong) way?

#### **STEP 4. MAKING PARADIDACTIC MATERIAL**

In this fourth and final stage, a comic book was made that deals with the Savannah biome. Based on the missing information or brought superficially in the textbooks analyzed. This material was produced with the aim of helping teachers in their classes and can therefore be used as a complementary material.

### **RESULTS AND DISCUSSION**

#### **BNCC, PCN'S AND PPP DOCUMENT ANALYSIS**

At the BNCC, the thematic units of Science and Geography were analyzed. For Natural Sciences, only the Matter and Energy, Life and Evolution, Earth and Universe units offer space to work with the theme, and in Geography, the Connections and Scales, and Nature units. Within the PCN's of Science and Geography, only the Axis Life and Environment of Sciences gives space for working with biomes, as well as in Geography the axes 2 "The study of nature and its importance for man" and 3 "Modernization, ways of life and the environmental issue".

When analyzing the BNCC and PCN's documents, it is clear that the Savannah theme is not addressed directly, but it is possible

to study the biome within themes such as ecosystems, soils, vegetation, climate, flora and fauna, water resources and machinery in agriculture, which are themes suggested by the Axes of the documents to be worked on in an interdisciplinary way.

Such results corroborate Siqueira's findings; Silva (2012); who claim that it is possible to work on the biome from subjects such as vegetation, ecosystems, soil, climate and relief, which are suggested within the documents. Mendes et al, (2016) also reinforces that the PCN's suggest interconnecting the Savannah with physical and natural issues, environmental degradation, mainly those caused by agribusiness.

Just as the Savannah is not directly addressed in the documents, this also applies to the schools' PPPs. It was possible to verify this when analyzing Table 3, which describes the schools that have PPP and the number of times that the terms environment and environmental education appear in the document, since they do not mention the Savannah.

According to Table 3, of the eight schools included in the survey, only five have a political pedagogical project. Therefore, schools V; VI and VIII did not make the document available because they were under construction or because they were not up to date, so the analysis only took place in the documents of schools I, II, III, IV and VII.

The PPP is an important document to organize the activities that will be carried out during the school year, so it must be built by the school community (manager, teachers, employees and family) before the school year starts, but unfortunately there are still schools that do not give a lot of importance, and this compromises in a way all the planning and operation of the same.

On this issue, Gonçalves (2015) and Trindade et al., (2015) point out that the

SCHOOLS	PEDAGOGICAL POLITICAL PROJECT	QUOTE OF THE THEME ENVIRONMENT/EA
I	It has	3
II	It has	2
III	It has	2
IV	It has	2
V	Under construction	Not available
VI	It is not updated	Not available
VII	It has	3
VIII	Under construction	Not available

Table 2 – Survey of schools regarding the PPP and the number of times the Environment/Environmental Education approach appears in the document.

Source: The authors.

Books	Name	Publisher/City	Year	Edition	Volume
“Geografia/LD1”	“Expedições Geográficas”	Moderna/ São Paulo	2015	2° ed	4
“Geografia/LD2”	“Homem e Espaço”	Saraiva/ São Paulo	2015	23° ed	4
“Geografia/LD3”	“Geração Alpha Geografia”	SM Educação/ São Paulo	2017	1° ed	1
“Geografia/LD4”	“Araribá Geografia”	Moderna/ São Paulo	2018	1° ed.	4
“Geografia/LD5”	“Teláris Geografia”	Ática/ São Paulo	2018	3° ed.	4
“Ciências/LD6”	“Projeto Teláris: Ciências Vida na Terra”	Ática/ São Paulo	2015	2° ed.	4
“Ciências/LD 7”	“Companhia das Ciências”	Saraiva/ São Paulo	2015	3° ed.	1
“Ciências/LD 8”	“Inspire Ciências”	FTD/ São Paulo	2018	1° ed.	7
“Ciências/LD 9”	“Companhia das Ciências”	Saraiva/ São Paulo	2018	5° ed	1
“Ciências/LD10”	“Ciências da Natureza aprendendo com o cotidiano”	Moderna/ São Paulo	2018	6°ed.	4

Table 3 – Textbooks adopted by the eight schools in 2019 and 2020.

Source: The authors/ adapted from Oliveira et al (2018).

Characterization of biome> Savannah		Do the books address more than one phytophysiology?	Which?
LD1	There is no characterization	1	Campos de Savannah
LD2	Characterized by the presence of twisted trees, small bushes, herbaceous vegetation and thick bark	None	None
LD3	The same characterization for the LD 2	None	None
LD4	Characterized by sparse vegetation and isolated trees, it is classified as the most biodiverse Savannah.	None	None
LD5	Classified as a savanna type, with mixed vegetation	None	None
LD6	It has tree and shrub species	1	Campo Sujo
LD7	Open formation with small plants, herbs, grasses, shrubs.	3	Campo Limpo, Campo Sujo and Cerradão
LD8	Trees tall and close to each other, in other vegetation bushes and trees, but in general the trees have twisted trunks because of the acidic soil and the fires.	2	Úmidos Veredas And Campos
LD9	Presence of grasses and bushy trees with thick trunks and twisted.	3	Campo Limpo, Campo Sujo and Cerradão
LD10	It is characterized by the presence of bushes, trees that are not large, twisted branches and thick bark and do not provide much shade.	None	None

Table 4 – Characterization of the Savannah and the types of phytophysiology presented by the books

Source: The authors/ adapted from Oliveira et al (2018).

PPP is indispensable in the formation of goals, actions and projects that help in the construction of school identity.

Still on the data in Table 3, in school I EE appears 3 times in the document, in school III and IV EE is mentioned 2 times, in school VII it is mentioned 3 times as an interdisciplinary project, without explanation of how these projects would be developed, and with the promotion of lectures throughout the school year regarding environmental education.

According to this result, it is evident that most of the schools that shared the documents do not have a plan for projects aimed at EE, even citing interdisciplinarity.

In this regard, Pucci et al (2014) say that although the PPP's present projects on the environment, the document does not explain how the activities must be developed. Mota (2014), reinforces that it is necessary to include environmental education in School's PPP, so that the new generation builds a different look in relation to the economy and the preservation of the environment.

In School II's PPP, environmental education is mentioned twice. The first citation corresponds to a project called "Healthy food with colors, aromas and flavors", that is, garden production. The second citation corresponds to the objectives of working with EE in the science discipline, within these objectives it is suggested to work with classes on the diversity of ecosystems and environmental impacts.

When working with vegetable gardens, there is room to involve the environment in which students are inserted and providing opportunities for not only the Savannah, but also other biomes to be studied in terms of their biodiversity, their values and also the current environmental impacts.

For Silva and Grzebieluka (2015), the inclusion of students in the daily life in which they live, favors interaction with the environment, learning the importance of

ecosystems and sustainability.

According to the analysis of the PPP's of the schools involved in the research, it is noticed that the environmental education theme is little addressed, without space, that is, its inclusion is not satisfactory and although some schools present PPP and insert the environmental theme, there is a lack of detailed clarification on how these projects will be developed in practice.

## **ANALYSIS OF SCIENCE AND GEOGRAPHY TEXTBOOKS**

Ten textbooks were analyzed, corresponding to the versions worked on in 2019 and 2020, namely: five on geography and five on science. The books address the Savannah biome and the theme is found in chapters dedicated to Brazilian ecosystems and morphoclimatic domains.

Regarding the characterization of the biome, in seven books the Savannah is characterized with plants with thick bark, twisted branches, small trees that provide little shade. The other books only report that the savannah is characterized by having arboreal, grassy, herbaceous species or being described as a Savannah.

In view of this analysis and other works such as Costa et al (2010) and Oliveira et al (2018), the Savannah in general has been characterized by the way it is described above, reinforcing a stereotyped look, in this sense, the books need to add that such characteristics vary from plant formation.

Of the ten books analyzed, only five cite or characterize one of the types of Savannah phytophysiology in a very superficial way, namely, Campo Dirty, Campo Limpo, Cerradão, Veredas, Humid Savannah, Campos de Savannah. Of all the books, only LD 7 exemplifies when he describes Clean Field – with a predominance of grasses, Dirty Field – with more vegetation cover and Cerradão –

with tall trees in greater numbers.

Following the example of LD7 (Science), it is easier for students to be able to interpret the types of vegetation that exist within the biome, but even so, in view of the analyses, it is clear that the biome is characterized in a very Yesilar way between the books and the lack of information regarding the types of phytophysiognomies of the Savannah can make students understand that the biome only has the vegetation that is being mentioned.

This result corroborates the ideas present in the literature (Mendes et al., 2016; Siqueira; Silva, 2012; Borges; Ferreira, 2018), which state that the limited way of characterizing the biome interferes with student learning, because, it is understood that the formation of the Savannah occurs everywhere in the same way, with the same aspects, in all landscapes.

Still on the characterization of the biome, in five books, the Savannah is characterized with plants with thick bark, twisted branches, small trees that provide little shade. The other books only report that the savannah is characterized by having arboreal, grassy, herbaceous species or being described as a Savannah.

Regarding these aspects, Alves; Rosa (2019), emphasize in their research the importance of structuring the textbook well, so that the real meaning of the Savannah for the environment as a whole is not distorted or even stereotyped.

In relation to the flora, books 1, 2, 3, 4 do not present explanations in images, much less in the texts. For the fauna, in addition to the cited books, including the 5 that correspond to the discipline of geography, they also do not exemplify or mention the animal species of the Savannah biome.

About this absence or even rare evidence of fauna and flora in some science and geography books, in addition to being verified in the present study, other authors such as Costa et al (2010) and Mendes et al (2016) point out that

the approach when it is present, it is shown in a Yesple and summarized way.

Book 6 presents species of fauna and flora, described in the text with their popular names, LD 7 shows species of fauna and flora in texts and images, but only the giant armadillo species is accompanied by its scientific name. In LD 8, it deals with fauna species in texts and images, but only Golden grass (*Syngonanthus nitens*), and flora Giant Armadillo (*Priodontes maximus*) and Giant Anteater (*Mymecophega tridactyla*) are presented with scientific names.

In LD 9 there are nine species of flora and six of fauna described in text and images, all accompanied by their popular names. Regarding the flora, only the pequi and the toucan's tail have a scientific name, as for the fauna, all species have their scientific names except for jaguar and maned wolf. And finally, LD 10 mentions in the text and in images three species of fauna typical of the Savannah and one of the flora.

In order for the information on the biome's biodiversity to be described correctly, both the popular and the scientific name must be related to each example covered by the book.

In view of the results, it was possible to perceive that most books do not work with the scientific names of the species, thus affirming what Oliveira et al (2018) and Bezerra and Goulart (2013) point out in their works that by not citing the scientific names of the species, the books are not giving importance to the information that is being passed on there.

Figure 2 represents the number of images that portray the vegetation, geographic division, fauna, flora, degradation of the biome and the number of pages dedicated to the Savannah approach in science and geography textbooks.

The science books with the most images are LD 8 (10), 7 (9), 10 (8) and LD 9 (7). However, most of the books analyzed in this study have a reduced number of images, in

Examples of fauna				Examples of flora		
Books	Examples	Scientific name	Popular name	Example	Popular name	Scientific name
LD1	It is not showed.	There is not any.	There is not any.	It is not showed.	There is not any.	There is not any.
LD2	It is not showed.	There is not any.	There is not any.	It is not showed.	There is not any.	There is not any.
LD3	It is not showed.	There is not any.	There is not any.	It is not showed.	There is not any.	There is not any.
LD4	It is not showed.	There is not any.	There is not any.	It is not showed.	There is not any.	There is not any.
LD5	It is not showed.	There is not any.	There is not any.	Lixeira, Pau-santo and Pequi	Yes	There is not any.
LD6	“Tamanduá-bandeira, Tatu-bola, Veado-catingueiro, Lobo-guará, Ema, Gavião-preto, and Tucano”	Yes	There is not any.	“Barbatimão, Pau-santo, Pau-terra, Catuaba, Ipê-do-savannah, Peroba-do-campo and Pequizeiro.”	Yes	There is not any.
LD7	“Onça-pintada, Tatu-canastra, Lobo-guará, Tamanduá-bandeira, Cachorro-vinagre and Águia-cinzenta.”	Yes	Only to Tatu-canastra	“Arnica, Pequi, Gabiroba, Pitanga, Douradinha, Ipê-amarelo, Carne-de-vaca, Sucupira-preta.”	Yes	There is not any.
LD8	Tamanduá-bandeira, Jaguatirica, Lobo-guará, Veado-catingueiro, Tatu-canastra, Cachorro-do-mato-vinagre, Ema, Águia-cinzenta.	Yes	Apenas para o Tamanduá-bandeira e Tatu-canastra.	Araça, Pequizeiro, Angelim, Jatobá, Cagaita, Capim-dourado, Pau-dente-seco.	Yes	Only to Capim Dourado
LD9	Tatu canastra, lobo guará, tamanduá bandeira, cachorro do mato vinagre and Águia cinzenta	Yes	Exceto “onça pintada” and “Lobo guará”	Arnica, Pequi, Gabiroba, Pitanga, Rabo-de-tucano, Douradinha, Ipê-amarelo, Carne-de-vaca, Sucupira preta.	Yes	Only Rabo de Tucano and Pequi.
LD10	Lobo-guará, Tamanduá-bandeira, Ema, Tatu-canastra.	Yes	There is not any.	Pequizeiro	Yes	There is not any.

Table 5 – Examples of fauna and flora with the respective use of popular and scientific names present in 7th grade science and geography textbooks.

Source: The authors/ adapted from Bezerra and Suess (2013).

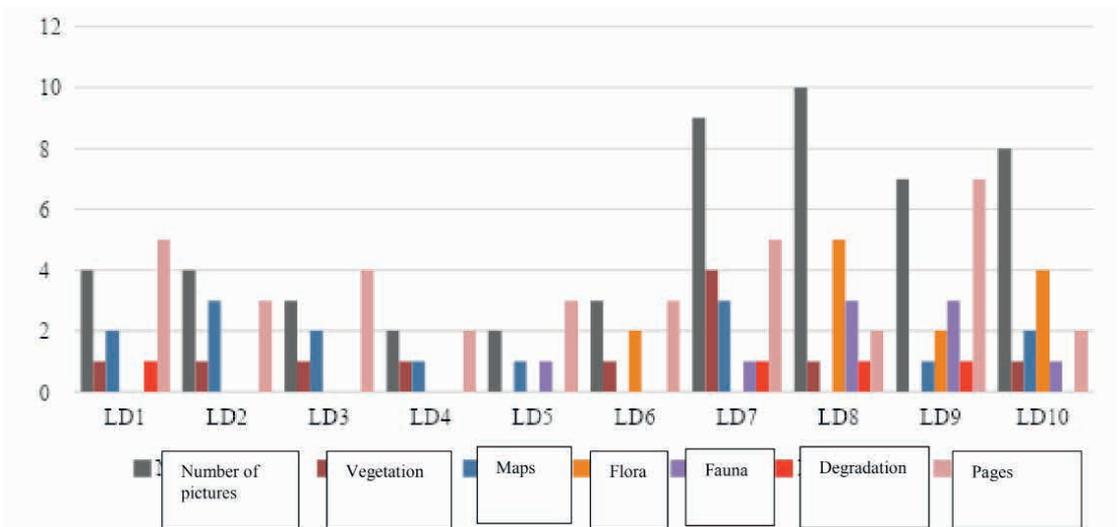


Figure 2 – Number of images and number of pages present in the textbooks analyzed

Source: The authors.



Figure 6. Parts of the paradidactic material - Comic book - the complete version is available at: <https://share.pixton.com/qygdv> .

Source: The authors.

addition to little connection with the texts. For Bezerra and Suess (2013), the visual elements present in the books, devoid of explanation, can confuse the student, consequently, hinder their learning.

According to Souza (2019) the visual resources brought in the books, such as images, need to encourage students to recognize and identify species of the biome and biodiversity in which the student is inserted.

Textbooks that stand out for having more pages are Textbook 9 (7), Textbook 7 and 1 (5) and Textbook 3 (4), with this result it is evident that most of the books adopted in the schools involved in the research have a limited number of pages devoted to the theme, in addition to that in some books, the Savannah shares space with other biomes. Therefore, the results of this study are consistent with the view brought by other authors (Bezerra and Goulart 2013; Siqueira e Silva 2012; Oliveira et al., 2018).

In LD 4 (Geography) the biome is identified as predominant in the Midwest, Southeast, Northeast, South and some smaller spots in the Amazon. In LD 6 (Science) the Savannah is distributed in the states of GO, MA, MT, MS, MG, SP and PR. LD 7 and 9 (Science) places the biome as part of DF, GO, MA, MT, MS, MG, BA, SP and TO. LD 8 (Science) mentions the presence of Savannah in the following states: DF, GO, MT, MS, TO, MG.

According to the geographic distribution, all the books fail to mention a state where the biome is present, such as Piauí and Rondônia, and LD 6 (Science) when stating that the biome is predominant in the Midwest, Southeast, Northeast and south, it is understood that these regions have total domain of the Savannah, however, we know that there are other biomes in these regions, such as the Caatinga in most of the northeastern states.

Most of the books do not address issues related to the conservation of the biome,

LD9 (Science) is the only one that still cites endangered fauna species: jaguar, giant armadillo, maned wolf, giant anteater, domato-vinagre and LD6 (Science) is also the only one that suggests preserving the biodiversity of the region, with the creation of natural reserves.

The superficiality in terms of content is highlighted above all in the restricted information on the degradation of the Savannah. There is no critical view of anthropic actions and ways to mitigate environmental impacts. Only activities such as: agribusiness, farming and mineral exploration are mentioned, impressions also noted by BEZERRA; SUESS (2013) and SOARES et al. (2019).

With regard to burning, the books only mention it as a natural occurrence, and its importance for the biome, due to helping in the regrowth of some plant species, however, little is said about intentional burning, this information is also confirmed by other authors (COSTA, 2020; SOARES et al., 2019; OLIVEIRA et al., 2018). In this sense, the degradation of the biome needs to be better emphasized in schools so that students understand the real situation in order to conserve it.

Only books 3 (Geography) 6, 8 and 9 (Science) bring about Savannah soils by characterizing them as poor and acidic soils and that repairs are needed to become conducive to the development of crops and the idea of the importance of the soil to the development of agricultural activities. LDs 7, 8, 9 and 10 (Science) are the only ones that characterize the Savannah climate as hot with temperatures between 20°C and 30°C.

There was a lack of information and, above all, a breakdown of content contextualized to the local reality, whether addressing biodiversity, natural resources (soil, water) and the threats facing the Savannah, this

lack of contextualization leads to weakness in the work involving the conservation and preservation of the biome, which in turn can interfere with elementary school students' learning, strengthening a distorted and sometimes prejudiced view of the Savannah.

## **PARADIDACTIC MATERIAL ON THE SAVANNAH BIOME**

Given the superficiality of the information found in textbooks, this topic was carefully thought out to reduce this gap, adopting the construction of the Comics about the biodiversity of the Savannah biome, its phytophysiognomies, degradation processes, among other aspects. Leading the reader to reflect on their role in and towards the environment. It is important to highlight that the comics are produced for general audiences and, for this reason, we believe in the success of the research, making the students understand what is being proposed in a scientific, educational and effective way.

The material is available to any audience that is interested through the Link: <https://share.pixton.com/qygkdva>. It is a booklet in the form of a comic book (Figure 6), built in the Pixton application, specific software for this purpose. Web 2.0 tools have facilitated the handling, preparation and dissemination of any document, allowing anyone to create their own file, without necessarily mastering programming and fancy virtual tools (LEITE; LEÃO, 2015).

In this sense, comics occupied space in the digital world, thus contributing to the production and dissemination of comics, especially for those who do not have the ability to draw.

The plot tells the story of a group, in the seventh year of elementary school, who, when visiting a park called "Parque do Cerrado", have the opportunity to get to know fauna and flora, peoples and their degradation up close.

The plot is marked by an interaction between the teacher, the Savannah park monitor and the students who are attentive and curious at all times. The story concludes by showing that the field class aroused interest, connected ideas and complemented what was put into theory.

According to Nicola and Paniz (2016), the use of paradidactic material is an important instrument that aims to facilitate the teaching and learning process of students in a playful and attractive way. This way, the objective of this booklet is to be able to assist in this process of teaching and learning for students, not only in the schools involved in the research, but for any school that wishes to approach the Savannah biome in a contextualized way from a Yesple, accessible and dynamic language.

## **FINAL CONSIDERATIONS**

The Savannah theme is not directly addressed in the schools' BNCC PCN's and PPP's documents, but it is possible to fit it into the contents, through interdisciplinarity, so that it gains visibility in the school routine.

From the analysis of textbooks, it was found that the Savannah, has a limited number of pages, there is no connection between image and text, being approached inconsistently, including the degradation of the biome.

When dealing with biodiversity, the species of fauna and flora are usually repeated in the copies, in addition to not being accompanied by their scientific names. The way this theme is explored in the books is worrying, since the Savannah is a biome that has a wide diversity of fauna and flora, in addition to its water and socioeconomic importance.

In order for the Savannah to become present in everyday school life and help in student learning and awareness, teachers need to be aware of updates in the area and especially to new teaching methodologies/strategies, since they are still very much hostage to books.

Despite criticizing the material, few are those who seek other strategies and resources to work on the theme and in this regard, paradidactic materials such as comic books are excellent instruments that instigate curiosity, work on reading, in addition to allowing students to get to know the history and learn more about the biome's biodiversity and conservation in a playful way.

## REFERENCES

- ALVES, Paulo Jean Pereira; ROSA, Odelfa. Abordagens do bioma Savannah, no livro didático: estudo de caso na School Estadual Martins Borges no município de Pires do Rio-GO. **Geoconexões**, v. 2, p. 5-11, 2019.
- BEZERRA, R.G., GOULART, L.S. (2013). A representação do bioma savannah em dois livros didáticos de biologia aprovados pelo PNLD,2012. **Revista Lugares de Educação**, Bananeiras/PB, v. 3, n. 7, p. 120-133.
- BEZERRA, R.G.; SUESS, R.C. Abordagem do Bioma Savannah em Livros Didáticos de Biologia do Ensino Médio. **Holos**, v.1, n.29, p. 233-242, 2013.
- BEZERRA, Rafael Gonçalves; NASCIMENTO, Lucy Mirian Campos Tavares. Concepções do bioma Savannah apresentadas por estudantes do Ensino Fundamental de Formosa- Goiás. **Cadernos de Educação Tecnologia e Sociedade**, v. 8, n. 1, p. 8-21, 2015.
- BORGES, Patricia Spinassé; FERREIRA, Juliana Yesião. Percepção ambiental dos alunos de Ensino Fundamental sobre a biodiversidade do Savannah. **Revista Ciências & Ideias** ISSN: 2176-1477, v. 9, n. 1, p. 1-18, 2018.
- COSTA, T. B.; SANTOS, M. P.; LARANJEIRA, D. O.; GUIMARÃES, L. D. A visão do bioma Savannah no Ensino Fundamental do município de Goiânia e sua relação com os livros didáticos utilizados como instrumento de ensino. **Polyphonia**, Universidade Federal do Goiás, v. 21, n. 1, p. 318-337, mai/2010.
- COSTA, A. H. da. Um olhar geográfico sobre o Savannah e os perigos de sua degradação. **Monografia (Geografia)**, Pontifícia Universidade Católica, Goiás, p. 44, 2020.
- CUNHA, R. D. T. D. O Savannah e o Ensino de Geografia: o trabalho de campo e a música como propostas metodológicas. **Encontro Nacional de Prática de Ensino de Geografia**, 14. Ed. Campinas-SP, 2019.
- DE OLIVEIRA, Danielle Lima et al. Integrando conhecimentos: uma abordagem etnobotânica para o ensino de ciências. **Brazilian Journal of Development**, v. 6, n. 9, p. 64202-64219, 2020.
- FUNDO NACIONAL DE DESENVOLVIMENTO DA EDUCAÇÃO -FNDE. **Escolha PNLD, 2019**. Disponível em: <https://www.fnde.gov.br>. Acesso em: 19 jul. 2020.
- GONÇALVES, A. M. O estudo da elaboração do projeto político pedagógico de um colégio da rede estadual de maringá. **EDUCERE**, 2015. Disponível em: [https://educere.bruc.com.br/arquivo/pdf2017/25309\\_12137.pdf](https://educere.bruc.com.br/arquivo/pdf2017/25309_12137.pdf). Acesso em: 25 de agosto de 2020.
- Guia de Livros Didáticos: **PNLD 2012: Química**. Brasília: Ministério da Educação, Secretaria de Educação Básica, 2011, 52 p. ISBN 978-85-7783-054-1.
- INSTITUTO NACIONAL DE PESQUISAS ESPACIAIS. Disponível em: [http://www.inpe.br/noticias/noticia.php?Cod\\_Noticia=5072](http://www.inpe.br/noticias/noticia.php?Cod_Noticia=5072). Acesso em: 1 mar. 2020.
- IPAM. **O Savannah é desmatado cinco vezes mais do que a Amazônia**. Disponível em: <https://ipam.org.br/savannah-e-desmatado-cinco-vezes-mais-rapido-que-amazonia/acesso> em: 23 de outubro de 2020.

ISP.N. **Savannah**. Disponível em: <https://ispn.org.br/biomas/savannah/berco-das-aguas/>. Acesso em: 2 mar, 2020.

LEITE, B. S.; LEÃO, M. B. C. Contribuição da Web 2.0 como ferramenta de aprendizagem: um estudo de caso. **Revista Brasileira de Ensino de Ciência e Tecnologia**, v. 8, n. 4, p. 288–315, 29 dez, 2015.

MENDES, O. de; Samuel; DE OLIVEIRA, Ivanilton José; DE MORAIS, Eliana Marta Barbosa. Abordagens do Savannah em livros didáticos de Geografia. **Revista Brasileira de Educação em Geografia**, v. 6, n. 12, p. 179-208, 2016.

MINISTÉRIO DA EDUCAÇÃO. **Proposta de Diretrizes Curriculares Nacionais para a Educação Ambiental**. Disponível em: <http://portal.mec.gov.br/dmdocuments/publicacao13.pdf>. Acesso em: 27 jul, 2018.

MINISTÉRIO DO MEIO AMBIENTE. **O Bioma Savannah**. Disponível em: <https://www.mma.gov.br/biomas/savannah.html>. Acesso em: 1 out, 2019.

MOTA, J. E. F. A Educação ambiental no Projeto Político Pedagógico da School. **Monografia (Especialização em Coordenação Pedagógica)**, UNB, Brasília, p. 38, 2014.

NICOLA, J. A.; PANIZ, C. M. A importância da utilização de diferentes recursos didáticos no ensino de ciências e biologia, **Revista do Núcleo de Educação a Distância da Unesp**. 2016.

OLIVEIRA, A. M. de. O uso dos Recursos didáticos no Ensino de Ciências em uma School pública de governador mangabeira/BA. **Cadernos PDE**, Versão On line, V. 1, Paraná, 2013.

OLIVEIRA, B. M. R.; FARIAS, R. R. S. da; FONTINELES, K. H. P. S. da; SANTOS, L. B. dos; Análise de livros didáticos sobre a abordagem do bioma Savannah, **Revista Sapiência**, Iporá-Go, v. 7, n. 2, 2018.

PUCCI, P. S. dos; LIMA, L. C. de; BOSQUETTE, C. Educação ambiental: Projeto Político Pedagógico de uma School de educação básica de Lages (SC), **X ANPED SUL**, Florianópolis, outubro de 2014.

SILVA, A. da. Aulas de Campo: interesse e obstáculos para professores de ciências no município de Santa Helena/PR. **Monografia (Licenciatura em Ciências Biológicas)**, UTFPR, Santa Helena, Paraná, p. 41, 2018.

SILVA, Rusvenia Luiza; CÉSAR, Marcel Bittencourt. Aprender o Savannah nas séries iniciais: possibilidades didáticas. **Revista Eletrônica Científica Ensino Interdisciplinar**, Mossoró, v. 4, n. 12, p. 1-15, nov, 2018.

SILVA, M. N. A educação ambiental na sociedade atual e sua abordagem no ambiente Schoolr. **Revista Âmbito Jurídico**. São Paulo, 2012. Disponível em: <https://ambitojuridico.com.br/cadernos/direito-ambiental/a-educacao-ambiental-na-sociedade-atual-e-sua-abordagem-no-ambiente-Schoolr>.

SILVA, J. A.; GRZEBIELUKA, D.; Educação Ambiental na School: do Projeto Político Pedagógico a prática docente. **Revista Monografias Ambientais**, v. 14, n. 3, Santa Maria, 2015.

SIQUEIRA, D. C. B. de; SILVA, M. A. da; A representação do Savannah nos livros didáticos na rede pública do Estado de Goiás. **Experiências em Ensino de Ciências**, v.14, n.3, 2019.

SOARES, Elizene Aparecida; DOS SANTOS, Dulce Pereira; DE CARVALHO ALVES, Rahyan. O Savannah numa concepção didático pedagógica. **Revista Ciranda**, v. 3, n. 1, p. 1-15, 2019.

SOUZA, José Vitor Rossi. As imagens nos livros didáticos de Geografia: trajetórias e significados. **Boletim Campineiro de Geografia**, v. 9, n. 2, p. 263-283, 2019.

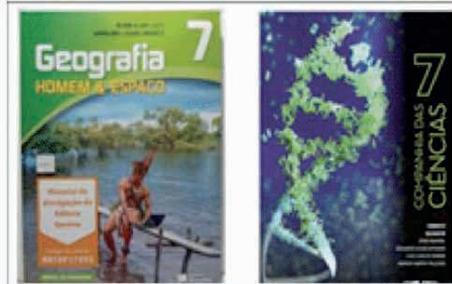
TRINDADE, L. M PINTO, L. B. de F. CAVALCANTE, M.N. ALMEIDA, R. S. Projeto Político Pedagógico: A gestão e a função social da School para a comunidade. **Revista Científica Semana Acadêmica**, v. 1, ed. 69, Fortaleza – Ce, 2015.

## ANNEX 1

Survey of Science and Geography Books adopted by schools in 2019 and 2020 respectively (Figures 1, 2, 3, 4 and 5).



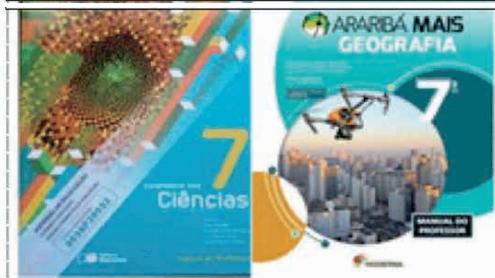
Books used in 2019, by the schools of Barreiras and Oliveira dos Brejinhos



Books used at Wanderley Municipal School, in 2019



Books used by schools in Barreiras in 2020.



Books used in schools in Oliveira dos Brejinhos, in 2020.

