

Profile of State and Municipal Schools in the Municipality of Itacoatiara: Environmental Education Context

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Abstract

The natural environment is essential to life because it is through it that it is possible to extract resources for living beings that are inserted in it. For this, a balance of living beings and the environment is necessary through environmental awareness. The research objectives are to obtain the profile of the analyzed schools, observing how EE is applied in the public network of the municipality, in order to create a manual of practices of applicability of Environmental Education in schools. The research was carried out in thirteen public schools in the city of Itacoatiara/Am. Authorizations were obtained for the visits, observing how the theme is applied in schools and whether they have environmental projects. After the visits, an online questionnaire was applied to teachers and students to detect the qualities and deficiencies of the schools. Finally, the profile of the schools was obtained in order to develop an interdisciplinary application manual in schools in the Amazon. As a result, it was found that public schools are more prepared to work on these themes, and in support of pedagogical resources, given the lack of municipal schools, which, in addition to the lack of material, do not have the application of environmental projects as in state schools in that all apply at least one. All teachers are interested in working in an interdisciplinary way, as the topics are only worked in the classroom and according to the students' results, they are not attractive. It is concluded that there are many deficiencies that need to be corrected, be they structural, pedagogical and material that could benefit the teaching of EE, and thus, make the practices more attractive to the students.

Keywords: environmental education; practices interdisciplinary;

1. Introduction

The natural environment is essential to life because it is through it that it is possible to extract resources for the living beings that are inserted in it, in addition to providing us with a strong integration with both the original nature, and equally with the soil, water, air, the flora, (SANTANA, 2021; SOUTO and ALVES, 2022). For this balance and/or harmony between living beings and the natural and urban environment to occur, an awareness of preservation from childhood is necessary, reaching an adult with more conscious habits (LOPES

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NETO and MASSAFERA, 2021). However, the preservation of the environment is part of the Legislation, such as Federal Law No, influences and integrations of a physical, chemical and biological order, which allows, compels and governs life in all its forms”.

In recent years, discussions about environmental problems have gained prominence and concern that has been growing sharply due to human actions causing the degradation of nature and destruction of natural resources (ALMEIDA, 2021 and FARO, 2017). This problem has generated actions aimed at exclusively economic interests such as extractivism of natural resources, as something to be explored and dominated (SOUZA E CARDOSO, 2020).

Extractivism based on the predatory exploitation of natural resources and resources has transformed and shaped man's relationship with nature (SANTOS, 2017), and this ungoverned predatory exploitation for years has caused environmental degradations that have caused climate change as one of the consequences (SANTOS, 2017). SOUZA, 2017).

As a result of the effects of climate change, the first scientific report on this topic was published by the World Health Organization (WHO), through the Intergovernmental Panel on Climate Change (IPCC) Assessment reports, which considered these changes to be risks to health and the human life in different forms and intensities by locations (IPCC, 2019).

Due to the consequences that could cause these changes exposed by the IPCC reports, new directions were traced through ideas that effectively stimulate environmental awareness. An alternative to encourage this awareness is the teaching of environmental education within schools in an interdisciplinary way, which involves several aspects in a critical and transformative way, seeking to form more and more reflective, critical and questioning individuals aware of their obligations and duties (MATIAS, 2019).

The critical and conscious educational training developed in schools in Brazil and the development of themes related to environmental education helps and shows students the importance of preserving natural resources, mainly because we live in a country with one of the greatest biodiversity in the world and natural wealth. (MACIEL AND MACIEL. 2021). However, it can be seen that the Brazilian educational methodology and Environmental Education (EE) are not applied homogeneously in the different regions of the country, despite the guidelines of the Ministry of Education - MEC through the Law of Directives and Bases of Education, which guides the applicability of EE in all schools in the federation, but not all adhere to this rule (BRASIL, 2017).

The inclusion of EE in the training of young people effectively obtains more expressive results when it is worked with early childhood education (AMORIM, 2021). However, the problem stands out regarding the non-applicability in formal education, in projects on the environmental theme, often in the absence of specific training of teachers and geographical isolation, which causes education to be developed unevenly in Brazil (CAMPELLO, 2017).

An example of geographic isolation is the schools located in the state of Amazonas, which are located in locations very far from each other and that the modes of transport are very restricted, being done mainly by boats and even by planes (DA SILVA, PAEZ, 2018)). This geographical peculiarity, in a way, ends up penalizing schools, especially those located in the interior of the state, where they lack port investments and

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adequate state/municipal public policies that benefit them by bringing development and better living conditions, reflecting significantly on the education of students. (SANTOS et al., 2021).

With that in mind, this article intends to make a profile analysis in schools located in the interior of the AM, showing their pedagogical and structural difficulties and aiming to create a manual of Environmental Education for applicability in schools with ideas and suggestions of activity according to the reality of each.

2. Methodology

This research was developed in the educational context of state and municipal schools in the city of Itacoatiara, in the interior of the state of Amazonas. The city is located 269 km away from the capital (Figure 1), with access by land through the state highway AM 010, being the fifth city in the state economy ranking. According to the IBGE (2021), by the year 2021 the city would have around 104,046 inhabitants, of which 18,955 would be enrolled in elementary school and 5,999 in high school.

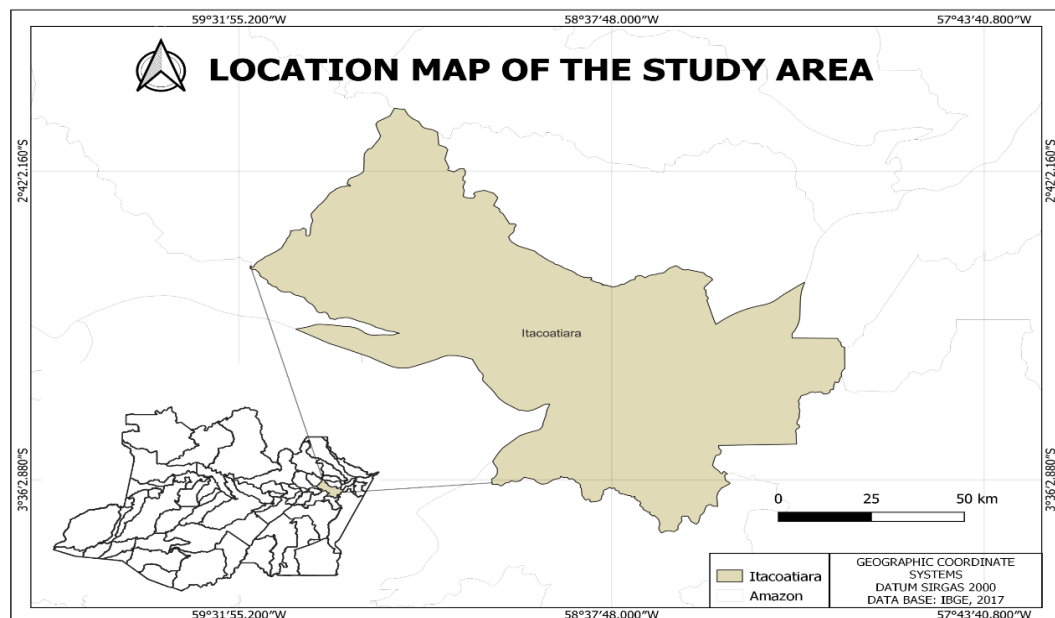


Figure 1. Location map of the study area.

Source: Authors (2022).

To obtain the profile of schools in the municipality in relation to EE, the first step of the research took place through contact with education managers in the municipality SEDUC through its regional coordination of education and Municipal Department of Education - SEMED. The objective of the contact with the managers was precisely to obtain the necessary authorizations to carry out the research in the schools, as observations would be carried out in loco to obtain information on the profile of each school, in addition to observing the ways in which they develop themes such as sustainability and environment. In those that develop the theme, it was observed if any project is developed, and in the cases that occurs, if there is any specific methodology used in a systematic way. Subsequently, it was observed if, in the case of any project/ and or research, it has

been applied in schools, if it comes to add to the experiences and experiences already used in schools. To this end, the scope of the research will be 13 schools in the education networks (Figure 2).

STATE SCHOOLS

- School Maria Ivone de Araújo Leite - High School - 12 rooms
- School Coronel Cruz - Elementary School I - 10 rooms
- School Luiza de Vasconcellos Dias - Elementary School I - 12 rooms
- School Teacher Vicente Geraldo de Mendonça Lima - Elementary School II - 8 rooms
- School Mirtes Rosa de Mendonça - High School and EJA - 12 rooms
- School João Valério de Oliveira - High School- 12 rooms
- School José Carlos Martins Mestrinho - High School - 10 rooms
- School Teacher Berezith Nascimento da Silva - High School II and EJA - 12 rooms

MUNICIPAL SCHOOLS

- School Jamel Amed - Elementary School I - 12 rooms
- School Yeda Henriques de Souza Auzier - Elementary School I and EJA, 10 rooms
- School Dom Paulo Mc Hugh - Elementary School II and EJA, 10 rooms
- School Teacher Maria Nira Guimarães - Elementary School II - 12 rooms
- School Maria Haide Chacon de Almeida - Elementary SchI - 6 rooms

Figure 2: List of schools analyzed

In addition, the work was developed with school managers, employees, teachers from different disciplines and students to obtain information if these practices are sufficient and attractive for their teaching and learning. To obtain quantitative results, online questionnaires were applied where the questions were exclusively related to environmental education in their respective schools.

After analyzing the data, where the qualities and deficiencies found in the schools surveyed will be detected, three models of Environmental Education Manuals for schools will be elaborated, being them of an interdisciplinary characteristic, that allow to assist in the elaboration of environmental projects and that allow the teachers to work them in an interdisciplinary way. Thus, with the development of the profile of the municipality, in the future, an EA Applicability Manual will be built in the state of Amazonas.

2.1 Criteria analyzed during visits

During the on-site visits, it was possible to observe some criteria developed by the research, which are related to schools, such as: physical structure, subjects that address environmental issues and their respective series, existence of EE projects and practices. In addition to these, additional criteria were analyzed such as the availability of pedagogical support resources such as computers, Datashow, internet access, way of developing and the students' interest in developing environmental and interdisciplinary themes. Figure 3 shows the analyzed criteria referring to the school and the teachers during the first visits carried out in the 13 schools of the state and municipal network.

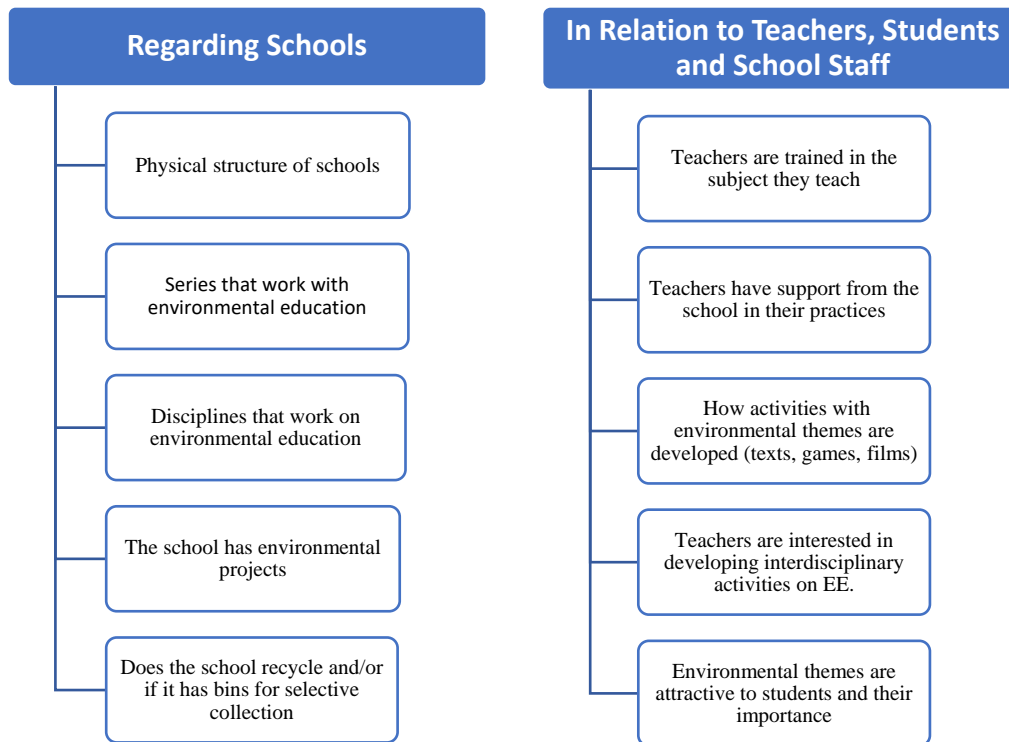


Figure 3. Criteria that were observed and analyzed during on-site visits

3. Results

During the on-site visits, it was possible to obtain the greatest amount of information about the analyzed schools, being possible to assemble a graphic scheme pointing out the negative and positive points of the state and municipal education networks in relation to the physical and intellectual structure for the applicability of EE in your facilities. The research showed (Figure 4a, b) that 90% of the teachers who teach the subjects that approach EE practices as sciences have training in the area. At the same time, 100% of professors are interested in working on EE in an interdisciplinary way. This result is similar to Saraiva et al., (2008) who showed that around 70% of teachers at the João Câmara school in Rio Grande do Norte practice EE, despite being aware that the practice would be easier if the school had a pedagogical political project. While Gomes (2011) shows in his research that municipal managers should strengthen the training of teachers in this subject, mainly guided by a critical view, due to the complexity of the subject.

When asked if all grades work on at least one EE topic in their respective disciplines, 100% of teachers from the state network said yes. At the same time, 80% of the professors stated that they have pedagogical material to develop EE, and they also have a physical structure for the practices (80%).

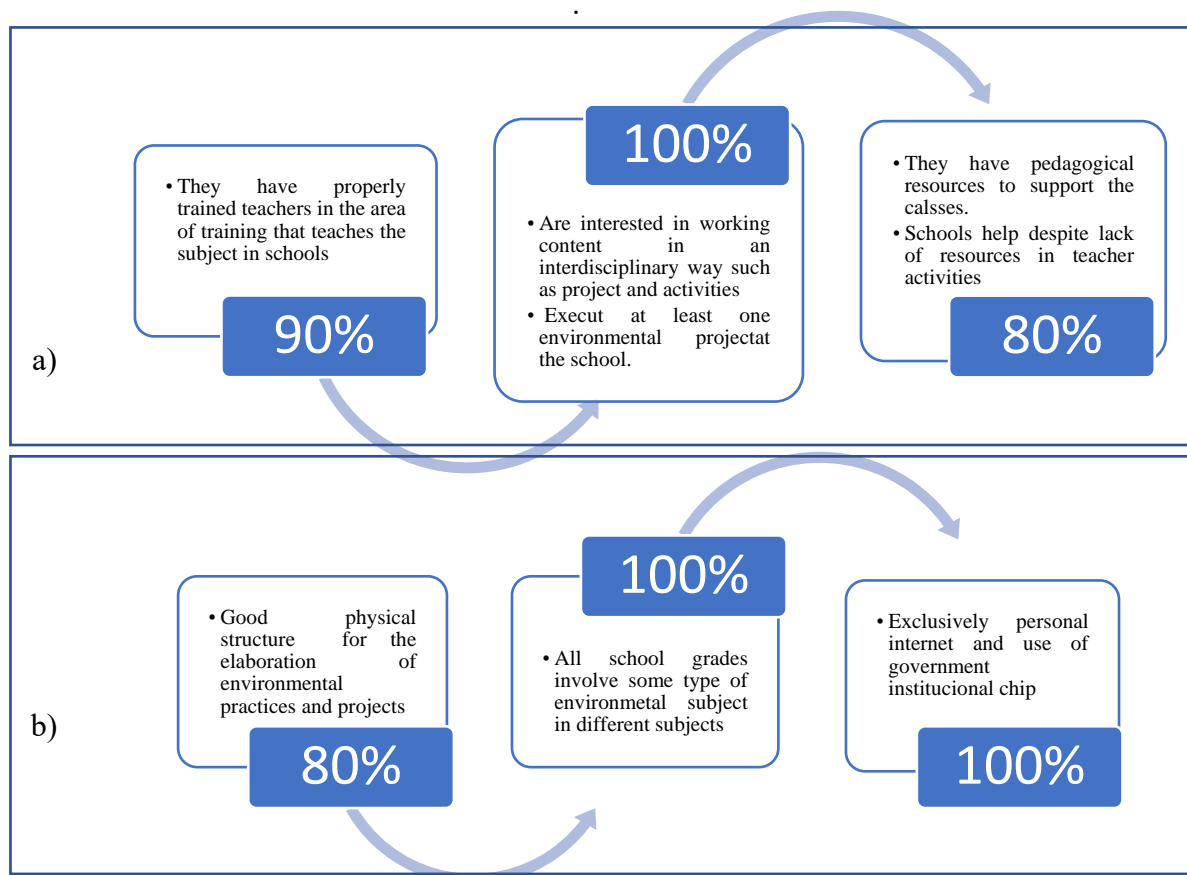


Figure 4. a) and b) Positive points analyzed from the profiles of state schools

In contrast to the positive points seen in state schools, some items that we consider as deficiencies and/or negative points in the education network in relation to the planning of activities were also analyzed. When the interdisciplinarity in the application of EE was approached, 100% of the professors answered that this practice is not applied, emphasizing the lack of planning for this. This was discussed in Procópio et al., (2021), where the authors showed the need to work on EE in an interdisciplinary way. Also presented as negative points in the state network, 100% said that the school does not properly separate and recycle the waste generated at the school. Furthermore, even schools that apply EE in the classroom, 100% of respondents say that they are not attractive (Figure 5).

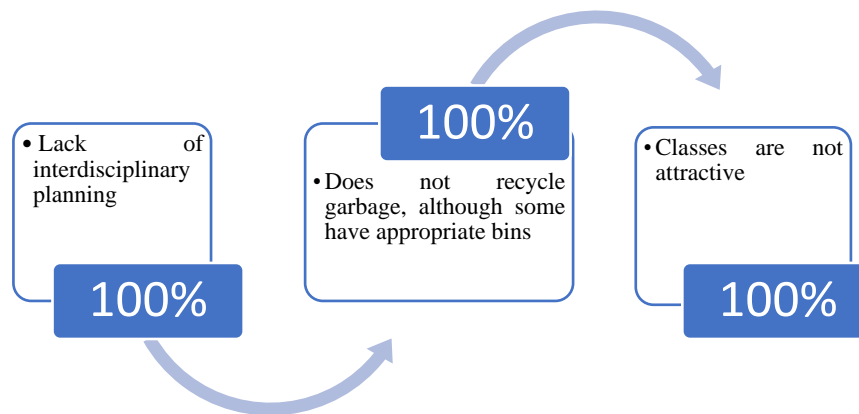


Figure 5. Negative points of the profiles of state schools

Subsequently, the same questions were proposed in municipal schools in the city of Itacoatiara (AM), showing different criteria. Regarding the points considered positive, only 70% of the teachers have the training (graduation) of the discipline taught, often because there is no teacher in the school with specific training (RODRIGUES et al., 2021). Still, 80% of the analyzed schools have physical space for EE practices, in addition to the interest of teachers in developing interdisciplinary activities, which showed how all (100%) of the teachers, as shown in Figure 6.

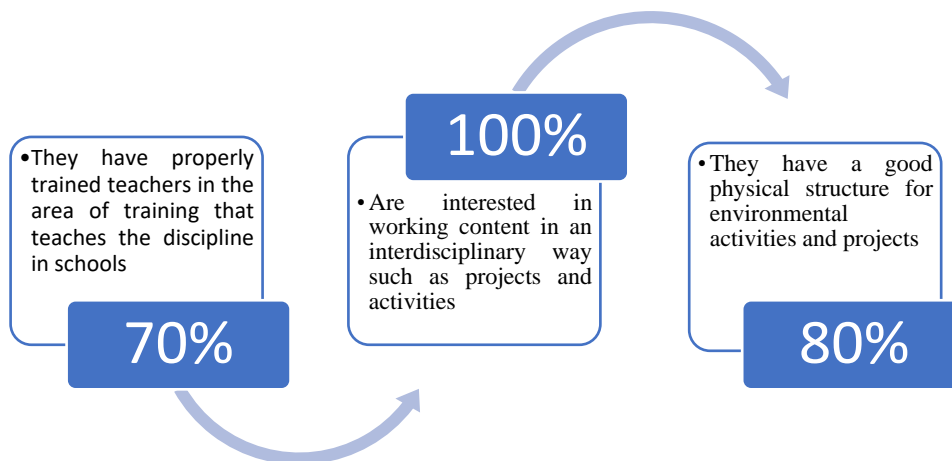


Figure 6. Positive points of municipal schools

On the other hand, when analyzing the points considered negative by the research, it was found that 100% of municipal schools do not practice any type of action related to the annual planning of interdisciplinary activities and neither do EE, yet 100% do not have a treatment system. of solid residues (recycling of garbage), still, on the lack of application of environmental projects due to deficiency of pedagogical resources and on the attractiveness of the classes being presented in Figure 7.

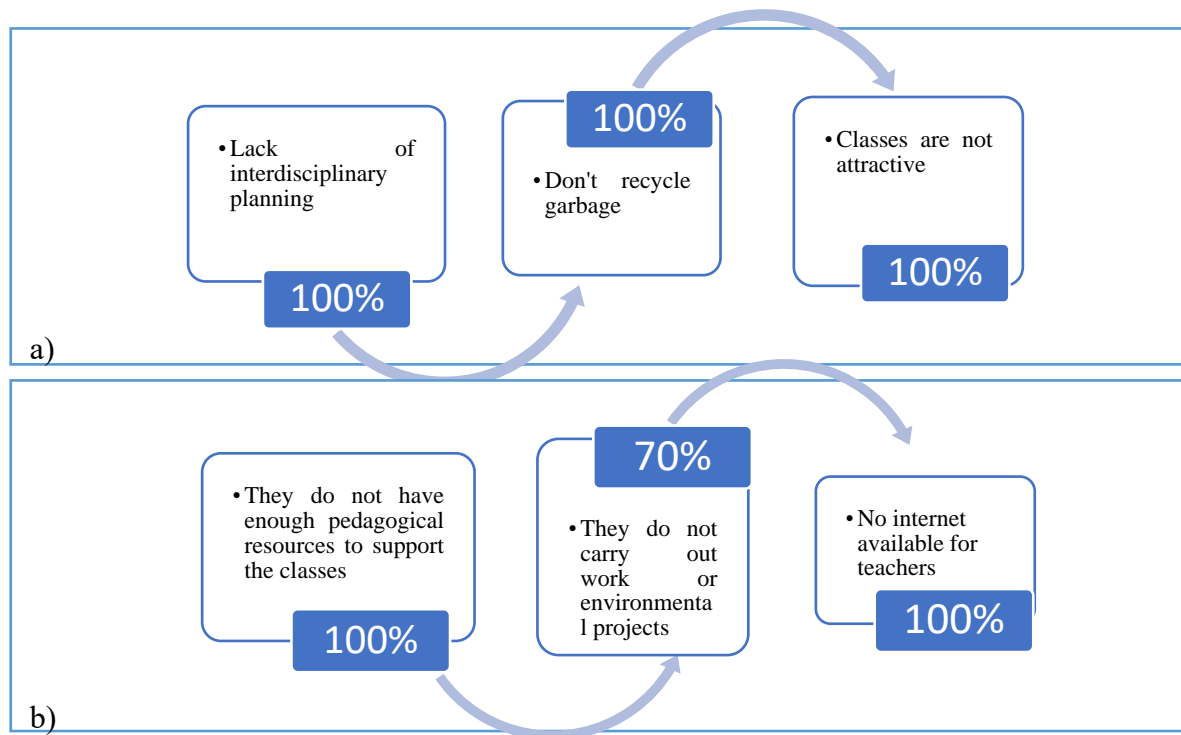


Figure 7. Negative aspects of municipal schools.

During the on-site visits, it was found that the information collected in these were the time of the visit, and some did not feel comfortable expressing their opinion on the possible problems at school. Thus, a digital questionnaire was prepared with carefully formulated questions for the faculty and students of the schools, adding additional information to the visit. With the collaboration of the managers, the questionnaire link was sent directly to the interviewee through institutional WhatsApp groups, preserving anonymity.

The questionnaire had a strong adhesion being answered by 181 teachers, considering that between the two education networks, the city has an average of 1322 teachers between the state and municipal networks. To analyze the answers, it was decided to divide the schools according to the education network to which they belong, thus: eight state schools and five municipal schools.

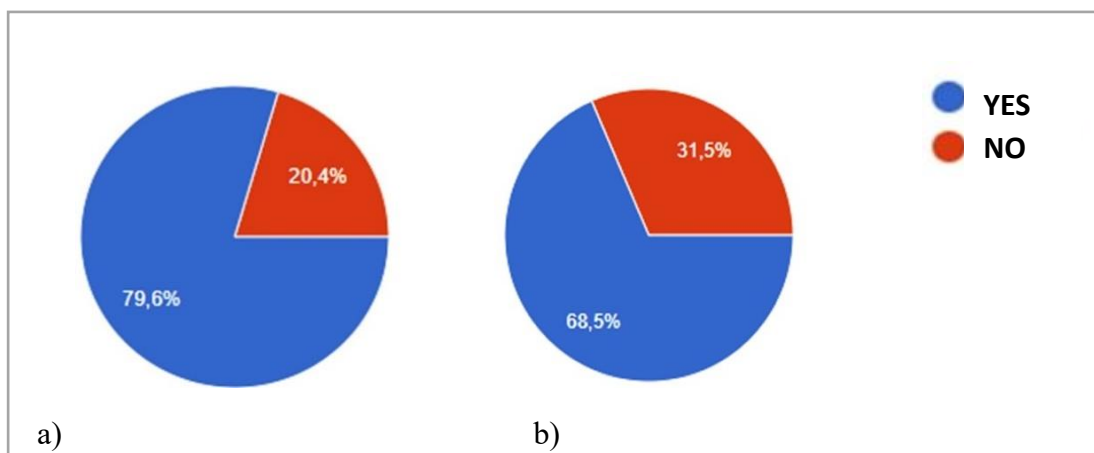
The physical space in a school is a factor of well-being and student learning in the school environment (SOUZA and SOUZA, 2014; SILVA, 2021), thinking about it, the presence of physical space for EE practices was the first topic addressed in the questionnaire (Graph 1a). According to the survey, 79.6% of professors (144) expressed the presence of sufficient and/or adequate physical space to develop EE practices, while 20.4% answered the opposite. In loco observation, it could be observed that only 2 schools of the 13 observed do not have adequate physical structure to carry out these activities, and that this is not the reason for the lack of adequate applicability of effective environmental education in schools (Graph 1a).

According to Mafra and Bonassina (2021), it is essential for the formation of human character to sensitize society to EE practices and themes. In the school environment it is important to develop pedagogical projects related to environmental practices, and when teachers were asked if the school they teach has projects that

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address environmental practices. Graph 1b shows that 68.5% responded positively, while 31.5% responded that any type of project or actions related to the theme is not applied or developed. It is important to emphasize that all 8 schools of the state network analyzed in this research, develop the *Agenda 21* project with the students during the school year. On the other hand, only three municipal schools develop an environmental project, which is applied and developed by students and teachers of the Federal University of As in partnership with municipal schools that only host the physical space.

Finally, the results show that schools in the state network have a better structure, are better equipped and prepared for EE projects and activities than those in the municipal network.



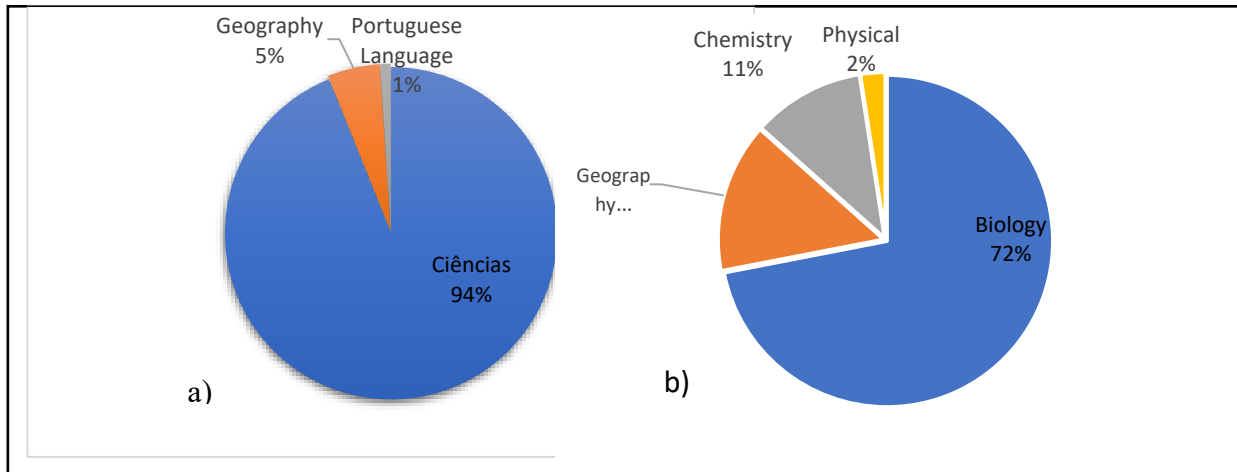
Graph 1. a) physical space at school; b) environmental project at school.

When asked about the subjects that develop the environmental theme in the classroom together with the syllabus, Graph 2a shows of the 92 elementary school teachers who participated in the research, 94% responded that the science subject is the one that most develops this theme, additionally, 5% mentioned working on EE in geography, and only 1% mentioned the Portuguese language discipline through text interpretation, essays and classroom activities that involve the theme (Graph 2). It was observed with these results that in elementary school all the theme related to EE and activities that involve the environment falls on the Science teacher to execute it, although the other subjects have in their syllabus themes that can be addressed to EE. Medeiros et al., (2011) highlight the importance of developing EE in elementary school, because according to the authors, it is at this moment that values are transmitted, transformations in the subject, identity and attitude towards the world.

In relation to high school subjects, Graph 2b shows that around 72% of respondents answered that Biology is the priority subject in the development of environmental themes, while 15% cited the subject of geography, 11% of respondents mentioned the subject of Chemistry and only 2% mentioned working EA in the Physics discipline. At the same time, Lipai et al., (2007) states that *“in high school and in the education of young people and adults, critical, contextualized and political thinking, and environmental citizenship must be even more in-depth, and the action of non-conformist groups can be encouraged”*. *only for the improvement of the quality of life, but especially for the search for socio-environmental justice, in the face of social inequalities*

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that expose economically vulnerable social groups in conditions of environmental risk.” Well, we know that in high school the subjects are more diversified and that somehow and at some point all of them have to work on themes related to the environment, this responsibility is taken away.

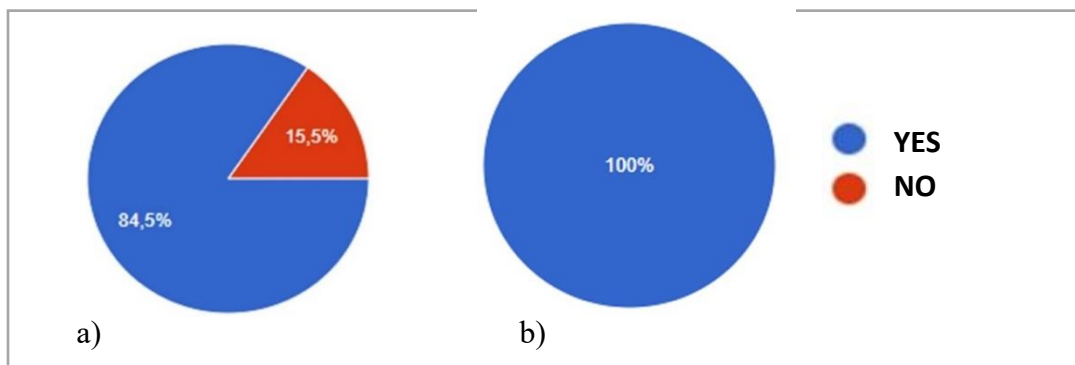


Graph 2: Subjects that work with EA: a) elementary education; b) high school

Also, respondents were asked about their academic background and whether it is related to the subjects they currently teach. It is possible to verify through Graph 3, that 84.5% of the teachers responded that their training is the same area or similar to that of the subject they teach at school, however, 28 people or 15.5% responded that teachers do not have this proper training in the discipline. Analyzing these numbers, it is observed that both education networks have teachers who teach classes that are completely different from their academic training, but that the municipal network of Itacoatiara stands out compared to the state network, which often impairs the proper development of activities.

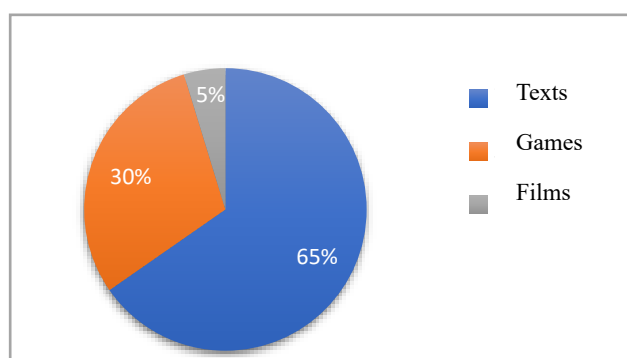
Costa et al., (2020) highlights the importance of Brazilian high school teachers who did not have higher education compatible with any of the subjects they taught. The authors showed through the School Census that during the period from 2007 to 2016, the incompatibility between the graduation of teachers and the discipline taught was one of the main reasons for the increase in student dropout rates, and school delay in high school, and age-grade distortion (COSTA et al., 2020; SILVA and MORENO, 2022). When asked if there was an interest in developing EE in the context of their discipline, the answer was unanimous, as 100% of the teachers said they were interested (Graph b).

However, it is noteworthy that an effective way to involve EE in any elementary and high school subjects would be through recreational activities such as games, cultural competitions, and tours, where students could experience the practices. Involving several disciplines in the applicability of EE, thus, the responsibility to execute them would not be of a single teacher, being this one of the barriers in the development of the activities. In addition, Zannata et al., (2013), Silva and Silveira Junior (2022) show that interdisciplinarity in the context of EE helps to solve practical problems, becoming a tool in the socialization of discourse and the socio-environmental perspective.



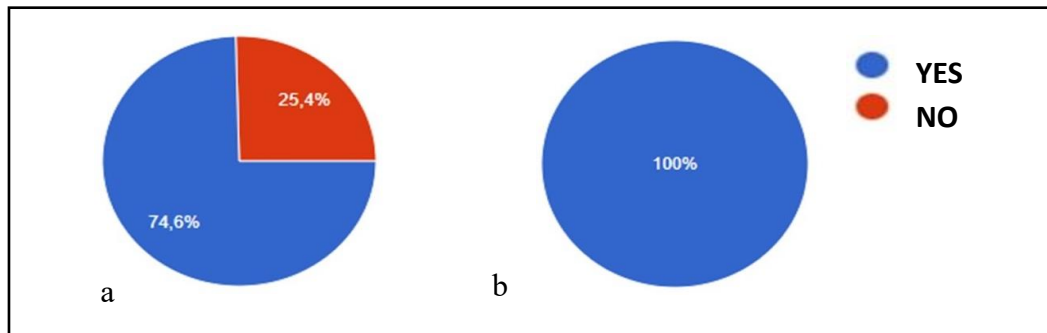
Graph 3. a) academic training of the teacher according to the discipline taught b) Interest of teachers to work EE in an interdisciplinary way

Regarding the dynamics used in the practices (Graph 4), 65% of the teachers mentioned that they use support texts that address the environment and EE, 30% apply games to develop the theme, while 5% of the teachers use short videos and documentaries involving environment in the classroom. Analyzing this result, it can be seen that most teachers develop the theme in the classroom and exclusively using the textbook, with the most dynamic activities being developed only on specific dates or school events, such as the Environment Week.



Graph 4. How environmental themes are developed in schools

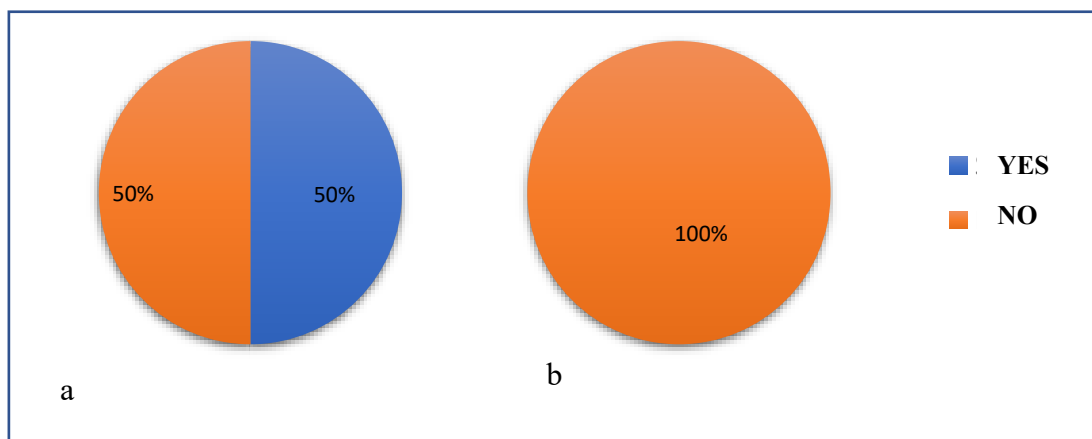
When they were asked about the existence of selective garbage collection bins (Graph 5 a), 74.6% mentioned the existence of garbage bins standardized by colors of selective garbage collection, while 25.4% admitted the absence of this type of dumps and, therefore, do not apply the separation of waste produced by schools. This result was possible to be verified during the on-site visits, showing that the large percentage of responses regarding the existence of collection bins happens because all schools in the state network have this type of garbage bins, unlike the municipal network. Despite these positive results, not all state schools use them properly. Given the relevance of EE in the current scenario, respondents were asked whether they recognized this importance (Graph 5b). All responded that they recognized the importance of the topic. Despite this positive analysis, it was observed that teachers do not apply the theme continuously.



Graph 5. a) School has garbage bin for selective collection; b) Whether Environmental Education is important

When asked about the availability of pedagogical material offered by schools to develop EE practices, the answers were divided into two groups, state and municipal schools (Graph 6 a, b). It was found that 50% of the schools in the state network (Graph 6 a) do not have support material for the practical activities proposed by them, unlike the municipal network, where 100% of the teachers who participated in the research mentioned that the school does not have sufficient support material, which greatly hinders EE practices (Graph 6b). At the same time, in both educational networks analyzed, teachers make use of their own resources such as: computers, video projectors, and others.

In addition, it was found during the visits to the schools that teachers from the state education network have access to the internet through a chip for individual use offered by the State Government. Meanwhile, in the municipal network, teachers do not have any type of access to aid access to the internet, being the use of this exclusively by the school administrative employee.



Graph 6. a) Schools in the state network that have pedagogical support material for teachers; b) Schools in the municipal network that have pedagogical support material for teachers.

4. Conclusion

The educational system is constantly under construction, overcoming its mistakes and trying to adapt to local realities, adding and overcoming efforts so that it actually takes on an interdisciplinary character. It can be seen that the theoretical frameworks presented in this research offer support that adds to the teaching method of educators, who encourage methods to incorporate interdisciplinary practices in Environmental Education. Using 13 public schools in Itacoatiara – AM as a research model, a whole process of data collection was carried out so that the profile of each school could be carried out, including state and municipal schools, evaluating and guiding their benefits and deficiencies.

It was noticed throughout the research process that there are many deficiencies that need to be corrected, be they structural, pedagogical and material that could benefit the teaching of EE, and thus, make the practices more attractive to the students. Still, it was observed that these activities fall exclusively to the teacher of specific subjects who often fail to develop attractive educational practices due to excessive work or lack of support and material and teaching. We emphasize the need to explore the concepts of the environment through EE in schools, because it is through it and with the support of the family and society that we will be able to change the current reality.

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