

## CAPÍTULO 6

# ENVIRONMENTAL EDUCATION FOR SUSTAINABILITY: PERCEPTION OF ELEMENTARY EDUCATION SCIENCE EDUCATORS IN THE MUNICIPALITY OF CAMPOS SALES – CE

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**ABSTRACT:** Environmental problems have existed for decades and every day they grow even more, affecting the quality of life of the entire world population, due to this fact there was a need to create alternatives to alleviate this situation, among them Environmental Education stands out. to develop learning focused on the conservation of the environment and sustainability that seeks to emphasize the conscious and responsible use of natural resources, aiming at the survival of current and future societies. Therefore, the present study sought to analyze what difficulties Science teachers in elementary school II face when teaching classes focused on sustainability. The methodological approach used was qualitative, the virtual form (via Google Form) was used for data collection. The research was carried out in three schools in the municipality of Campos Sales–CE. Through the results it can be seen that students know the importance of sustainability, and that they like to work on the subject in the classroom, but what ends up hindering a higher quality of teaching is the low relevance index that some schools and the secretary of education give in relation to the theme addressed. In view of this, it is necessary for there to be a change in the attitude of school managers together with the education department to be more incisive with issues related to sustainability.

**KEYWORDS:** Teaching Learning; Environment; Academic education.

## EDUCAÇÃO AMBIENTAL PARA A SUSTENTABILIDADE: PERCEPÇÃO DOS EDUCADORES DE CIÊNCIAS DO ENSINO FUNDAMENTAL II NO MUNICÍPIO DE CAMPOS SALES – CE

**RESUMO:** Os problemas ambientais existem há décadas e a cada dia crescem mais ainda afetando a qualidade de vida de toda a população mundial, por tal fato viu-se a necessidade de criar alternativas para amenizar tal situação, dentre elas destaca-se a Educação Ambiental que busca desenvolver uma aprendizagem voltada para a conservação do meio ambiente, e a sustentabilidade que busca enfatizar o uso consciente e responsável dos recursos naturais, visando à sobrevivência da atual sociedade e das futuras. Assim sendo, o presente estudo buscou analisar quais dificuldades os professores de Ciências do ensino fundamental II encontram para lecionar aulas voltadas para a sustentabilidade. À abordagem metodológica utilizada foi a qualitativa, foi utilizado o formulário virtual (via Google Formulário) para coleta de dados. A pesquisa foi desenvolvida em três escolas na sede do município de Campos Sales–CE. Através dos resultados pode-se observar que os educandos sabem da importância da sustentabilidade, e que gostam de trabalhar o tema em sala de aulas, mas o que acaba dificultando em uma maior qualidade do ensino é o baixo índice de relevância que algumas escolas e a secretaria de educação dão em relação à temática abordada. Diante disso, é necessário que haja uma mudança de postura dos gestores escolares juntamente com a secretaria de educação para serem mais incisivos com temas voltados para a sustentabilidade.

**PALAVRAS-CHAVE:** Ensino Aprendizagem; Ambiente; Educação acadêmica.

## 1 | INTRODUCTION

It is notorious that global environmental problems have existed for decades, however, they have had a considerable increase since the industrial revolution that contributed to the expansion of human consumption, in addition to the quality of life and consequently

to the increase in the withdrawal of raw materials. of nature and the degradation of the environment (SINAIS; ALBUQUERQUE, 2018).

For this reason, there was a need to create alternatives to alleviate this situation, among which Environmental Education stands out, which seeks to develop learning focused on the conservation of the environment, and is now considered a great ally in the formation of conscious citizens and concerned with the environmental problems we face since antiquity (SILVA; BIANCHI; ARAÚJO, 2021). And sustainability can be understood as a tool that seeks to emphasize the conscious and responsible use of natural resources, aiming at the survival of current and future societies.

Despite such importance, Environmental Education was not seen as relevant in relation to other problems in society and only gained visibility in Brazil in 1973 through the creation of the Special Secretariat for the Environment (SEMA). And in 1999 it was declared in article 2 of the “PNEA (National Policy for Environmental Education)” of federal law 9.795/99 as an essential right for society that must be part of all levels and modalities of education, whether public or private. . Although environmental education is currently ensured through public policies, they have not been sufficient to guarantee quality teaching and the development of students’ critical thinking about environmental causes (GUIMARÃES, 2007).

Also according to Gadotti (2008) Caring for the environment depends on ecological awareness and the formation of awareness depends on Education. Especially if we take into account that the current consumerism culture that has been contributing to the devastation of the environment in a fast and inconsequential way, taking such proportions due to the limitations in the search for knowledge about the impacts caused by the excessive use of renewable resources (ALBA; BARRETO; ALBA, 2015).

In addition, the process of learning to care and be concerned about nature occurs slowly and gradually and as people understand that the inappropriate use of nature’s resources can affect the quality of life of all living beings present in the environment , come to understand that care for the environment is not the responsibility of government agencies alone and that as citizens, we must do our part to take responsibility for controlling environmental degradation (FERREIRA et al., 2019).

In this context, it is noted the importance of teaching institutions to develop educational activities aimed at the environmental area that encourage students and promote the development of values and attitudes, in order to make them aware of how they should act towards nature and about their responsibility in guarantee resources for the survival of future generations, being the most conducive place to discuss this subject (COELHO, 2018).

However, environmental issues are still very neglected in schools, both due to the lack of government investment in educational resources for the development of practical activities, as well as the lack of commitment on the part of management and the school community that contribute to the hiring of untrained educators. or academic training with

unsubstantiated and outdated teaching techniques and, consequently, making it difficult to implement sustainability in this space (ALBA; BARRETO; ALBA, 2015). Therefore, this research aims to understand the aspects that make it difficult for teachers to engage with sustainability in the classroom.

## **2 | MATERIALS AND METHODS**

### **2.1 Study Design**

This research proposes to understand the aspects that make it difficult for teachers to engage with sustainability in the classroom. For that, we assume the methodological bases of qualitative research, which seeks to understand the social phenomena that cannot be quantified, the use of this method serves to understand the educational phenomenon and the complexity of the social variables inherent in the study objective (GHEDIN; FRANCO, 2011 ).

### **2.2 Study Locus and Data Collection Period**

The present research was carried out in three Elementary Schools II from the 6th to the 9th grade: E.E.I.F João XXIII, E.E.I.F Manoel Duarte De Sá Barreto and E.E.I.F Padre Azarias Sobreira. The three schools are located in the urban area of the city of Campos Sales-CE. The municipality extends over 1,082.582 km<sup>2</sup> and has 27,513 inhabitants in the last census (IBGE, 2021). The demographic density is 24.48 inhabitants per km<sup>2</sup>. Data were collected in March 2023.

### **2.3 Research Universe**

The research had the voluntary participation of six science teachers, in order to find out about the perception of science educators in elementary school II on environmental education for sustainability.

### **2.4 Data Collection Instruments and Procedures**

For data collection, a virtual questionnaire (Google Form) was used, which was sent via WhatsApp to the teachers of (School 01), (School 02) and (School 03). The choice of the structured questionnaire was given because it is a tool that allows obtaining a large number of participants, in addition to guaranteeing the anonymity of those involved and, consequently, greater freedom when answering the questions.

The questionnaire was structured with 15 questions, among which we have objective and subjective questions. In order for the participants to feel more comfortable when answering the survey, it is not mandatory that they answer all the questions or that

they complete the form, in addition, no information of possible identification was or will be published, after collection the data were compiled in a spreadsheet and analyzed descriptively, graphs and tables were constructed to aid in the interpretation and discussion of the results.

## 2.5 Ethical and Legal Aspects of Research

Foi apresentada a carta de anuência à diretora da escola e o Termo de Consentimento Livre e Esclarecido (TCLE) para os participantes. A participação dos professores ocorreu de forma voluntária e estes foram informados sobre os objetivos, riscos e benefícios da pesquisa. Para preservar a identidade dos participantes, estes foram identificados no texto como professores (as).

## 3 | RESULTS AND DISCUSSION

The main focus of this research was to understand the aspects that make it difficult for teachers to engage with sustainability in the classroom. Therefore, the present study had the participation of six science teachers of elementary school II, four women and two men from three different schools in the municipality of Campos Sales-CE. of 20 years.

Initially, you were asked about your academic background? Do you have a graduate degree? It was found that 50% of respondents have undergraduate and graduate degrees, and only 33% only have undergraduate degrees and finally 17% have specialization. It is very important for the continuing education of teachers, as it is one of the main elements of valuing their teaching (GATTI; BARRETO, 2009; GATTI, BARRETO; ANDRE, 2011). It should be noted that even the teachers teaching science classes, their academic training does not match the area, as it was found that most teachers have a degree in Mathematics, some in Biological Sciences and another in Literature.

When asked what year/series do you work in? We noticed that teachers teach classes in a large number of classes in elementary school II, we observed that 33% teach between the 6th and 9th grades, most of the teachers with 50% teach classes from 6th to 7th grade and the others with 17% teach classes in different grades, among the 06 teachers, 02 are still high school teachers.

When asked if, in addition to the Science discipline, the professors teach other disciplines, there was unanimity in the answers, all mentioned that yes, they taught other disciplines. As the last answer was yes, the next question was in relation to what these disciplines would be, 33% of the professors teach Mathematics and Regional Studies, all the other disciplines mentioned have an average of 17%, the other disciplines reported would be Mathematics and Biology, Religious Studies, Mathematics, Geography and Religious Education.

The role of the teacher in elementary school has some peculiarities, as an example of this we can mention the polyvalence where the subject has the ability to appropriate basic knowledge in different areas (LIMA, 2007), where the professional is responsible for several disciplines who are often not specialists in the area, but end up being responsible for several disciplines that go beyond their theoretical contribution, as highlighted (GABINI; FURUTA, 2018). The polyvalence of elementary school educators can lead to a difficulty in exercising their teaching role, due to the very long workday, as well as low wages, financial and emotional exhaustion (BATISTA, 2011).

When participants were asked what they understood by sustainability, the responses had similar opinions where they mentioned that sustainability is a set of actions to preserve the environment today and for future generations, avoiding the destruction of the environment with pollution, fires and deforestation. These would be the possible contributions to the preservation of the environment.

Teacher 1	It is the set of actions that aim to preserve future generations.
Teacher 2	Sustainability for me is defined in actions taken in the present, which will have the same result or even better in the future, that is, in the field of science, for example: sustainability boils down to avoiding deforestation, pollution, fires, etc. That way we will ensure a better future.
Teacher 3	Sustainability is making use of natural resources responsibly, without waste, care and preserving for future generations.

Table 1 - Participants' perceptions of sustainability.

Source: Author (2023)

According to Magalhães (2010), sustainability is: The ability to sustain or conserve a process or system. The word sustainable derives from the Latin *sustainare* (sustainability) and means sustaining, supporting, conserving and caring. The concept of sustainability addresses how one should act in relation to nature. In addition, it can be applied from a community to the entire planet. In view of this, sustainability also promotes the construction of knowledge, the development of skills, attitudes and values, care for the community of life, justice and socio-environmental equity and protection of the environment (BRASIL, 2016).

In the next question, 100% of the professors mentioned that they address issues involving sustainability. In view of this, we were curious to ask whether, even when addressing the topic in the classroom, the teachers had any difficulty in working on sustainability issues in the classroom, it was mentioned that they did not encounter difficulties and that they liked to work with the theme, they also mentioned that the students are not interested and do not put into practice their actions.

Teacher 1	I particularly love working on these themes related to environmental issues and sustainability is a very important and good topic to develop in the classroom.
Teacher 2	The student is too lazy to put his action into practice.
Teacher 3	The issue today, which makes teaching about sustainability difficult, is the students' lack of interest, based on what they demonstrate, they think that polluting the environment, dismantling or causing fires, does not affect their day-to-day activities, with that they end up not taking the topic seriously.

Table 2- Difficulties that teachers face in working on sustainability in the classroom.

Source: Author (2023)

Faced with the speech of teachers who do not find it difficult to work on the subject in the classroom, what happens in many cases is the lack of interest on the part of the students. This can happen for several reasons, such as issues involving the perception of values, personal beliefs, culture and the political point of view and, sometimes, subjective and complex issues interfere in discussions on this topic (SANTIAGO-BROWN, METCALFE, JERRAM, 2015 ). Another point to be discussed is the need to go beyond the understanding of sustainability and seek practical solutions to enhance education. Zamberlan et al. (2015), in the view of Kruger et al. (2018) there is a gap between the theoretical discourse and the proper understanding of the subject. It is known that the school plans deal with several relevant themes, and contents and methodologies are outlined to be taught in classes. In view of this, we asked whether any theme related to the environment or sustainability is addressed or discussed in the planning. Through the study, it was found that 83% of the plans address the issue, and 17% say that it is rarely addressed.

In view of the teachers' reports, the importance of planning is noted, as it is from this concept that there will be an exchange of information between teachers where possible doubts regarding sustainability will be clarified. In that perspective. Dias and Severo (2020) report that planning is essential in pedagogical work, as it involves actions in order to achieve certain objectives. According to Hoffmann (2013) school plans are considered elementary, as methodologies, projects, assessments, among others, will be developed.

Another question presented to the participants is whether the textbook emphasizes sustainable learning, about 50% of people answered yes, 33% said that sometimes and 17% mentioned that the textbook does not emphasize sustainable learning.

From the analysis of the data, we noticed that the textbook still has a central role in the pedagogical process in schools, until the present moment it is the main resource used by several teachers, often acting as the center of teaching practice, forgetting its real role. which would be a support in the construction of teaching/learning (VASCONCELOS; SOUTO, 2003). However, Bittencourt (2004) and Prensky (2001) believe that this traditional method changes over the years, as the book is not the only reliable source of research and that many times the book presents methodical teaching without contextualization and even interdisciplinarity ( SILVA; SILVA, 2011).

When approached to teachers, what methodology(s) could you develop to teach sustainability-oriented activities in the classroom? Most of the professors mentioned that projects would be of great importance, as well as workshops, debates, lectures, conversations and lectures.

Teacher 1	Projects and workshops.
Teacher 2	In my case, use the expository class, addressing topics we go through on a daily basis, topics that directly interfere with the sustainability of our region, especially the issue of pollution (air, water and soil) that happens frequently.
Teacher 3	Debates, lectures, films, conversation wheel, slides, etc.

Table 3 – Teachers’ considerations about which methodologies could be developed to teach sustainability-oriented classes.

Source: Author (2023)

Among the various effective methodologies to address the issue, we can mention, in addition to those mentioned by teachers, the active methodology that is the starting point for advancing reflection, cognitive integration, generalization, and re-elaboration of new practices (MORAN, 2015). Active methodologies aim to educate students to learn in an autonomous and participatory way, which can be done using technologies, or through project development, or even through flipped classes, which consist of students studying at home and moments of the class are to ask questions, perform tasks, among other things (PEREIRA; SILVA, 2018).

Temp (2011) mentions another alternative methodology that are didactic models, as an example there is environmental education that enhances the debate and reflection on the need for conscious consumption, as well as the disposal and reuse of waste generated. Lopes and Nunes (2010) point out the importance of practices related to the production of didactic models, in order to be used during classes, providing reflections on environmental degradation, in addition to contributing to the teaching and learning process. Alves et al. (2018) point out that the incorporation of reusable objects in didactic-pedagogical methods can help in learning, in addition to encouraging the adoption of sustainable practices, encouraging students to disseminate them.

In the next question, it was asked if it is important to work on the theme focused on sustainability, yes or no? Why? All agreed that it is important, therefore, sustainability is necessary for the well-being of all living beings, and that sustainability guarantees or can guarantee a decrease in the risk of so-called ‘Natural’ disasters and that it is also fundamental for the development of the students’ critical thinking.



Teacher 1	Yes. Because sustainability is necessary for the well-being of all living beings and future generations.
Teacher 2	In my opinion yes, if sustainability is not the basis of future growth, it is one of them, because with sustainability we guarantee or can guarantee a reduction in the risk of so-called “natural” disasters such as: the melting of glaciers, hurricanes, tsunamis, between others.
Teacher 3	Yes, because we should try to develop our students’ critical sense of environmental issues, which is of paramount importance.

Table 4- Teachers’ considerations about the importance of working on sustainability.

Source: Author (2023)

Gadotti (2008) describes that education for sustainability implies a change of attitude in respect for life, and also in daily care for the planet and care for the entire community, so the author emphasizes that education for sustainability is for all of life, as both are not dissociated and are related to the dream of living well.

Therefore, sustainability is a process that must be constituted in the long term, as it requires a change in the conscience and lifestyle of a society that is able to decide and act in the socio-environmental reality in a way that is committed to life, to well-being. of each one and of society, local and global (BRASIL, 1997).

Sustainability is a process that should reach society as a whole, with a view to significantly transforming the population to face the environmental crisis, it becomes evident that working together with the community tends to raise awareness for the readjustment of skills and attitudes towards the environment, being of relevant importance the approach of the theme in the school environment (GALVAN et al., 2011).

When teachers were asked if school management provides any activity aimed at sustainable development? If yes, what would they be? we observed that the school management of some schools does not provide the necessary subsidies for the theme, but some teachers reported that, when requested, they have the school’s encouragement and that they work on some themes.

Teacher 1	No.
Teacher 2	Yes, I work on school projects aimed at growing trees and other plants that help our development.
Teacher 3	Every time we need it, management is a partner in events.
Teacher 3	Rarely

Table 5 – School management provides activities for sustainable development.

Source: Author (2023)

Therefore, the positioning of school managers is of fundamental importance, because they emerge as part of this social dynamic, collaborating as articulators of diversity to give

it unity and consistency, management enables a dialogue that allows all of the school staff to participate and contribute in the implementation of pedagogical projects, which makes the teaching-learning processes much more meaningful for teachers, the manager has a key role in encouraging the practice throughout the school environment following the recommendations that the MEC predisposes (GADOTTI, 2013).

It is of great value that the management core and teachers are always contributing to school education, so the last question is aimed at the secretary of education with regard to how the performance of the secretary of education in environmental issues is evaluated. According to the answers, 50% of the teachers described it as regular, 33% as good and 17% as bad.

In view of the exposed facts, the low rate of participation of the education department in working on the theme focused on sustainability is noted. Therefore, it is necessary for the municipal education department to develop actions aimed at planning and coordinating, executing and controlling activities aimed at sustainability related to guidance, supervision and administration of the education system, among other related activities (KENNEDY, 2009).

## CONCLUSIONS

The present study revealed that teachers have a long pedagogical career and that, in addition to the Science subject, they teach other subjects in several classrooms. The research is aimed at Science teachers in elementary school II. However, a worrying fact refers to the fact that professors not qualified to teach Science are at the forefront of the discipline. Among the disciplines that teachers are trained in and that teach the most, Mathematics stands out.

We also verified that the teachers recognize the importance of sustainability, stating that it is a set of actions to preserve the environment today and for future generations, avoiding the destruction of the environment. Teachers also report that relevant topics are dealt with in the plans, and many of the teachers like to work with the theme, but that they find some difficulties in putting into practice some activities related to sustainability, as they often have students' disinterest.

We also observed that textbooks emphasize sustainability, but in a summarized way, without the proper depth of the theme, in addition, school management assumes an almost supporting role, where they often participate in relevant projects and sometimes it is not worked on nothing about it, it is also clear that the Department of Education gives even less importance to sustainability, leaving the management core and teachers to develop some theme without support.

In view of this, it is necessary for there to be a change in the attitude of school administrators, together with the Department of Education, to be more incisive with issues

related to sustainability, since what can be seen is that teachers are aware of the importance and like to work on content focused on sustainability, but need subsidies to reinforce such themes in their pedagogical practices.

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