revista online de extensão e cultura
REALIZAÇÃO

DOI 10.30612/realizacao.v12i23.24142
ISSN: 2358-3401

Submitted June 3, 2025
Accepted August 6, 2025
Published September 30, 2025

ENVIRONMENTAL EDUCATION IN HIGH SCHOOL: ACTIVE STRATEGIES FOR THE FORMATION OF SUSTAINABLE ECOLOGICAL CONSCIOUSNESS

EDUCAÇÃO AMBIENTAL NO ENSINO MÉDIO: ESTRATÉGIAS ATIVAS PARA A FORMAÇÃO DE UMA CONSCIÊNCIA ECOLÓGICA SUSTENTÁVEL

EDUCACIÓN AMBIENTAL EN LA ESCUELA SECUNDARIA: ESTRATEGIAS ACTIVAS PARA EL DESARROLLO DE UNA CONCIENCIA ECOLÓGICA SOSTENIBLE

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Abstract: This case study reports on the implementation of environmental education strategies in a public school in Portel-PA, Brazil. The primary objective was to modify students' perceptions and treatment of natural resources. Practical activities, including eco-friendly soap production, seed paper creation, and institutional arborization, were conducted. The findings indicate that these practices significantly enhanced students' environmental awareness and understanding of conservation importance. Environmental education is crucial for fostering responsible and conscious citizenship.

Keywords: Environmental Education, Ecological Awareness, Sustainability.

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Resumo: Este trabalho apresenta uma experiência de aplicação de estratégias de educação ambiental em uma escola pública de Portel-PA. O objetivo foi modificar a maneira como os alunos compreendem e tratam os recursos naturais. Foram realizadas atividades práticas como elaboração de sabão ecológico, produção de papel semente e arborização da instituição. Os resultados mostraram que essas práticas contribuíram para a conscientização dos alunos sobre a importância da conservação ambiental. A educação ambiental é fundamental para a formação de cidadãos conscientes e responsáveis.
Palavras-chave: Educação Ambiental, Consciência Ecológica, Sustentabilidade.

Resumen: Este artículo presenta una experiencia de aplicación de estrategias de educación ambiental en una escuela pública de Portel, Pará. El objetivo fue transformar la comprensión y el manejo de los recursos naturales por parte de los estudiantes. Se realizaron actividades prácticas como la elaboración de jabón ecológico, la producción de papel con semillas y la plantación de árboles en la escuela. Los resultados mostraron que estas prácticas contribuyeron a la concienciación de los estudiantes sobre la importancia de la conservación del medio ambiente. La educación ambiental es fundamental para el desarrollo de ciudadanos conscientes y responsables.
Palabras clave: Educación Ambiental, Conciencia Ecológica, Sostenibilidad.

INTRODUCTION

Environmental conservation is an increasingly urgent issue, considering the impacts of human actions on natural resources. In Brazil, environmental education is regulated by Law 9.795/99, which establishes the National Environmental Education Policy, and by the recent Law 9.981/2023, which reinforces the importance of ecological awareness in educational institutions. Amid these challenges, the role of education stands out as a fundamental agent in promoting behavior change and the development of environmental awareness, especially among young people.

Since the 1970s, environmental education has been a recurring topic, driven by significant economic and technological growth. Strategies to address the crisis facing the planet due to the disorderly use of natural resources have emerged. Governmental and non-governmental organizations have joined forces to create laws to defend environmental rights.

From this perspective, the general objective of this work is to analyze the environmental practices carried out by students, and how they have incorporated care for the

planet into their daily habits, and the difficulties in this process.

This paper presents an experience applying environmental education strategies at Colégio Estadual Deputado Nicias Ribeiro, in Portel, Pará, focusing on high school students. The initiative sought to change the way students understand and treat natural resources, encouraging a more sustainable relationship with the environment. Combining theory and practice, an environmentally-based educational project was developed to change the reality of how students treat natural resources and how they can change the life cycle of frequently used materials.

In 2024, environmental education classes were included in the high school curriculum at Colégio Estadual Deputado Nicias Ribeiro, with the aim of positively contributing to students' socio-environmental habits.

The actions included: production of soap and scented candles by reusing cooking oil, planting trees in an area of the school with trees of the Cenostigma tocantinum species , popularly known as “pau preto” (black wood), and making seed paper from materials discarded at the school.

The work complies with Law 9,795 of April 27, 1999, which in Article 2 reaffirms that "Environmental Education is an essential and permanent component of national education and must be present, in an integrated manner, at all levels and modalities of the educational process, both formal and informal." In addition to the aforementioned national environmental education law, it is also based on state legislation, as established by Law 9,981 of July 6, 2023, which establishes the Formal Education Policy for the Environment, Sustainability, and Climate, linked to the State Secretariat of Education (SEDUC). In Article 1, the Law highlights the objective of implementing educational actions and practices in basic education, aimed at defending environmental preservation, combined with Article 3, item II, which addresses the implementation of environmental education projects and/or programs.

Thus, the project addresses Education for Environmental, Social, and Economic Sustainability, mobilizing the school community and fostering youth leadership through the actions developed. It also promotes reflection, critical thinking, intervention, and/or solutions to a community's socio-environmental problems, respecting and recognizing knowledge and cultures, and encouraging students to take action on themselves and the collective, both locally and globally, within the perspective of a sustainable society.

Therefore, the work is based on curricular guidelines, national and state legislation, emergency plans and actions of a socio-environmental nature, with numerous benefits: climate, arboreal, awareness, appreciation, educational and interactive with the school community, as

everyone is a socio-environmental protagonist, benefiting the ecosystem and the school community.

THEORETICAL BASIS

Environmental Education

The emergence of environmental education initially occurred through environmental movements (MATOS, 2009; MELO, 2019), in which, over time, this theme became widely debated and gradually began to gain more attention in various societal scenarios, becoming increasingly important in the political and academic fields, as well as in the media (CRIBB, 2010).

According to Silva et al. (2019), environmental education is understood as an educational practice that allows those involved to reason about environmental issues, being very important for raising awareness among the population regarding quality of life and the environment, in addition to promoting guidelines for development based on sustainability.

In several countries, programs and strategies have been developed with the intention of reducing environmental degradation or finding new alternatives for less impactful production and consumption processes.

In this context, the implementation and monitoring of sustainable development initiatives has been developing. This is the result of discussions at the social and governmental levels, based on the recognition of the need to implement a form of development that includes not only economic development, but also social justice and environmental conservation.

Within this context, when discussions focus on legislation and environmental education, implementation takes a back seat, as there is little data to help understand and address this issue. Therefore, the Environmental Governance Indicators for Latin America and the Caribbean represent the first step toward addressing this challenge, as they aim to measure how environmental governance works in practice.

These indicators are a qualitative assessment tool for ten countries: “Argentina, Bolivia, Brazil, Colombia, Costa Rica, El Salvador, Jamaica, Peru, Dominican Republic and Uruguay” (VIZEU PINHEIRO et al., 2020).

Citizen participation is essential for decision-making that can trigger the resolution of social and environmental problems, which at first seem local. However, the choices made in their daily lives can instigate significant results.

Environmental Education, as a whole, provides multidisciplinary knowledge and

information that contribute to the development of citizens who are more aware of environmental problems, which implies changes in attitudes and motivation to act toward solutions. However, presenting solutions is not an ordinary task, as it requires complex thinking and interdisciplinary actions.

Therefore, it is necessary to promote dialogues that bring individuals and society, subject and object, closer together, enabling citizens to see the bigger picture (GRANDISOLI; CURVELO; NEIMAN, 2021). It is important to emphasize that environmental education alone does not solve complex environmental problems. However, it can have a decisive influence, as it fosters the development of citizens who are aware of their rights and responsibilities.

By being aware of and understanding global issues and taking action within their communities, citizens can adopt values and attitudes that inform changes in their daily lives (REIGOTA, 2009). In the second half of the 20th century, the pressure on the environment and the decelerated use of its finite resources awakened society's awareness that humanity has the capacity to significantly impact nature (BARRETO; VILAÇA, 2018).

Based on this understanding, the need to address collective and individual human behavior and its relationship with emerging environmental issues was recognized (ABREU; VASCONCELOS; ALBUQUERQUE, 2017). In this context, in 1972, the United Nations Conference on the Human Environment took place in Stockholm, Sweden, where world leaders highlighted the need to promote education for the population to solve environmental problems, recommending the establishment of Environmental Education (EE) programs at the international level (BARRETO; VILAÇA, 2018; ATHMAN; MONROE, 2001). Following this recommendation, in 1975 the United Nations Educational, Scientific and Cultural Organization (UNESCO) held an International Meeting on Environmental Education in Belgrade, formerly Yugoslavia.

Environmental Education as an Interdisciplinary Practice in the Formation of Ecological Consciousness

Environmental education in schools can be crucial in mitigating the environmental problems that have been caused by human activity for years. Children and adolescents represent the future generations in the making, and because they are still in the cognitive development stage, it's assumed that environmental awareness can be internalized and translated more successfully in them than in adults, as they don't yet have established habits and behaviors.

> The National Curricular Parameters present the contents on the Environment integrated with other areas, in a transversal relationship, so that it incorporates all educational practice and, at the same time, creates a global and comprehensive vision of the environmental issue, visualizing the physical and historical-social aspects, as well as the articulations between the local and planetary scale of these problems (BRASIL, 1997, p. 193).

Environmental Education is an essential component in the process of permanent training and education, with an interdisciplinary approach, aimed at problem-solving, contributes to the active involvement of the public, makes the educational system more relevant and more realistic and establishes greater interdependence between these systems and the natural and social environment, with the objective of increasing the well-being of human communities.

We can emphasize that, when implemented, environmental education provokes great interest among students in the topics covered and the proposed activities, as well as involvement among teachers of various disciplines and between them and the students, not only at school, but also in the community.

According to Nascimento (2020), work focused on Environmental Education in schools, when it effectively involves students, becomes fundamental for the exchange of knowledge and awakening interest in the natural environment, while transforming these students into multipliers of the knowledge that is constructed.

Interdisciplinary projects prove to be efficient when they sharpen interdisciplinary thinking and allow teachers to reflect on their common goals in building integrated learning, thus reducing excessive compartmentalization between disciplines.

To develop interdisciplinary projects, teachers need to transcend the boundaries of institutionalized disciplines to reach a consensus on common themes, which can be developed in line with the experienced perspective of each specialist, using methods specific to each discipline, but which allow for the exchange of knowledge and experiences (NASCIMENTO et al., 2018).

In this way, the environmental education project can offer greater integration of the disciplines that adhere to it, also promoting learning in a contextualized way, making students address real issues in their daily lives, thus enabling a transformative education that is concerned with local and global problems.

DIAGNOSIS AND CONTEXTUALIZATION

For an environmental education program to be successful, it's essential to begin with a

diagnostic assessment that considers students' prior knowledge and interest in environmental issues. This initial understanding allows activities to be planned to be more relevant and engaging for students, as well as aligned with the local environmental reality.

Assessing prior knowledge is a fundamental step in assessing students' level of familiarity with ecological issues. Through introductory activities, we seek to identify students' initial understanding of topics such as conservation, sustainability, and environmental impact, providing a starting point for developing practical approaches.

Analyzing the local context is equally crucial, as it allows environmental education to connect with the region's specific environmental issues, such as deforestation, water pollution, and waste accumulation. By addressing issues that are relevant to students' realities, educational activities gain practical relevance, increasing their potential for impact and engagement.

Finally, open discussion with students provides insights into the topics that most interest them, such as recycling, climate change, or biodiversity. This dialogue allows us to tailor the content to align with their curiosities and concerns, making the learning experience more personalized and motivating.

Planning and Defining Themes

Planning environmental themes and pedagogical approaches is a fundamental step for the success of an environmental education program, ensuring that the content is relevant and that the learning is clear and applicable.

- **Topic Selection:** The content will be organized into thematic modules that address key issues such as water resources, air quality, biodiversity, waste and recycling, sustainable energy, and climate change. This division facilitates in-depth study of each topic and allows students to understand environmental challenges in their various dimensions.
- **Defining learning objectives:** For each module, specific objectives will be established to guide the teaching-learning process. These objectives will define what students are expected to understand and be able to apply, such as the importance of water conservation, waste reduction practices, or the impact of greenhouse gas emissions on global warming.
- **Development of teaching materials:** Various resources, such as handouts, presentations, videos, and hands-on activity guides, will be created to support students' understanding of the topics. These teaching materials will be designed to facilitate learning and offer students diverse and engaging experiences, reinforcing the concepts discussed in each module.

These planning steps aim to ensure that the program is structured effectively, with accessible content and clear objectives, promoting enriching and meaningful environmental education.

Practical Application and Interactive Activities

The goal is to connect environmental concepts with practical activities that engage and motivate students, promoting active and meaningful learning. Below are suggestions for practical activities:

- **Practical outdoor classes:** Take students to green spaces to observe local biodiversity, collect samples, and learn about the surrounding ecosystems. This hands-on experience fosters a more direct connection with the environment.
- **Sustainability workshops:** Conduct workshops on topics such as composting, vegetable gardening, and soap production from recycled oil, allowing students to apply sustainability concepts and develop manual skills.
- **Community projects:** Encourage students to participate in school and community projects, such as creating selective waste collection systems, environmental awareness campaigns, or establishing a community garden. These activities foster a sense of social and environmental responsibility.

These initiatives form a complete cycle of planning, action, and evaluation, ensuring that environmental education goes beyond awareness. The goal is to empower students to apply their knowledge in practice, transforming them into active agents of change within the school and community.

USE OF INTERACTIVE METHODOLOGIES AND INTERDISCIPLINARY PROJECTS

The use of interactive methodologies and interdisciplinary projects is a powerful approach to fostering a holistic understanding of environmental challenges. By integrating different disciplines, such as mathematics, biology, chemistry, geography, and history, interdisciplinary projects create meaningful connections between scientific knowledge and students' practical realities, encouraging critical analysis, problem-solving, and social engagement. This type of collaborative learning allows students to grasp the complexity of environmental issues, developing skills that go beyond traditional content and that apply to

sustainable decision-making in everyday life.

In mathematics, for example, students can analyze statistical data on deforestation, greenhouse gas emissions, or water consumption, allowing them to work with real data and see how the use of statistics and graphs contributes to understanding the scale of environmental problems. This exercise can be complemented by biology, where students can explore how deforestation and pollution affect biodiversity and ecosystem health. Chemistry, in turn, can deepen students' understanding of the impacts of pollutants and chemicals on soil and water, addressing topics such as water resource contamination and the use of pesticides and fertilizers.

Furthermore, geography can address the social and economic aspects of environmental issues, such as urbanization, natural resource consumption, and the uneven distribution of environmental impacts. History, meanwhile, can provide context for the evolution of human practices and how economic development and cultural changes have influenced the environment over time. Thus, interdisciplinary projects help students understand that environmental problems are complex and interconnected, requiring a global and multifaceted approach to be solved.

The use of interactive methodologies, such as simulations, experimental laboratories, and outdoor activities, also contributes to active learning and the development of practical skills. Simulations of population growth models, for example, help students visualize the impacts of different consumption rates and population growth on natural resources. Similarly, conducting laboratory experiments, such as analyzing water or soil samples, brings students closer to real-world environmental challenges and reinforces the importance of scientific research in understanding ecological processes.

Project-based learning (PBL) is another interactive methodology that can be integrated into interdisciplinary projects, challenging students to develop practical solutions to local environmental problems. For example, students can plan and implement a composting system at school, develop awareness campaigns to reduce plastic consumption, or organize a tree-planting drive in urban areas. These activities allow students to apply the knowledge gained in the classroom, understand the impact of their actions, and develop collaboration, communication, and leadership skills.

These interactive methodologies and interdisciplinary projects also support the development of ethical and socio-environmental values in students, encouraging them to reflect on their role as global citizens and their responsibility to future generations. By engaging in practical and interdisciplinary activities, students come to understand environmental education not just as a set of school subjects, but as a personal commitment to caring for and preserving

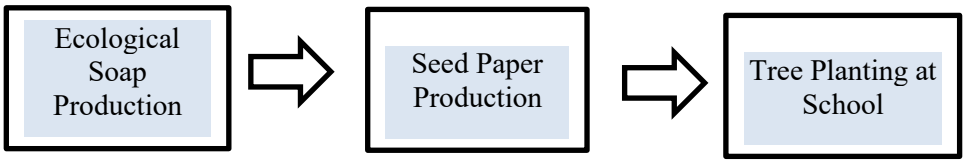
the environment. The application of interactive methodologies in high school, therefore, is essential to prepare conscientious citizens, capable of facing environmental challenges creatively, critically, and responsibly.

In short, the integration of interactive methodologies and interdisciplinary projects into high school environmental education contributes to a comprehensive and meaningful education for students. These projects offer a more comprehensive view of environmental challenges and possible solutions, helping young people develop a solid foundation of knowledge, skills, and values that will guide them in their future decisions and empower them to act as agents of change in their communities and the world.

METHODOLOGY

The work was carried out at the Deputado Nicias Ribeiro State School, located in the municipality of Portel - PA, including teachers, staff and students aged 14 to 20. Following Figure 1, there is the methodological flowchart, with the activities developed.

Figure 1. Methodological flowchart.



Source: Own authorship (2024)

Description of the production of ecological soap

The first step was to create an eco-friendly soap at the Deputado Nicias Ribeiro School Laboratory. The students used discarded cooking oil. To produce the eco-friendly bar soap, they used the following materials: one medium-sized beaker (approximately 500 ml), one plastic mixer, 150 ml of water, 40 grams of caustic soda flakes with a concentration greater than 70% purity, 250 ml of filtered used cooking oil, 5 ml of lavender essence, and one plastic tray to hold the mixture.

The procedure was carried out with due safety precautions, including the use of personal protective equipment (PPE) such as gloves, goggles, and an apron. Initially, the caustic soda

was dissolved in the water with careful stirring, forming an alkaline solution. After the solution had completely dissolved and cooled, the filtered oil was gradually added, stirring constantly until the desired consistency was achieved. Finally, the lavender essence was added, and the mixture was poured onto a plastic tray for drying and subsequent cutting into bars.

The resulting soap was left to rest for a minimum period of 24 hours for complete solidification, and was subsequently cured for approximately 15 to 20 days, ensuring its chemical stability and safety for use.

Description of seed paper production

The second stage was the production of seed paper, which was done by reusing discarded paper from the Deputado Nicias Ribeiro School. The materials used were: a blender; a large bowl; a paper sifting screen; the seeds; TNT (non-woven fabric); and water.

Initially, the discarded paper was torn into small pieces and soaked in water for approximately 12 hours to facilitate shredding. The mixture was then placed in a blender and ground into a smooth pulp.

This pulp was then poured into a basin containing additional water, creating a more dilute suspension. Using a sieve or screened frame, the students collected the pulp and spread it evenly, forming a sheet of paper.

At this point, the selected seeds were distributed over the surface of the still-wet pulp, pressing lightly to adhere them without crushing them. The newly formed paper was carefully transferred to a surface covered with non-woven fabric, where it was left to dry naturally for up to 48 hours.

After drying, the papers were removed from the non-woven fabric, resulting in sheets of handmade paper with embedded seeds, ready to be used as cards, labels, or educational materials. When planted in suitable soil and watered regularly, the paper decomposes and allows the seeds to germinate, completing its sustainable cycle.

Description of the school's trees

The third stage of the project involved planting trees in the outdoor areas of Colégio Deputado Nicias Ribeiro, with active participation from students who took measurements and determined the spacing between plants. The materials used included hoes, irrigation systems, and manure as organic fertilizer.

Planting followed basic urban tree planting guidelines, with spacing between 1 and 2 meters, depending on the size of the selected species. Simple and accessible materials were used: hoes to dig the holes, sprinklers to maintain soil moisture, and organic manure as a natural fertilizer.

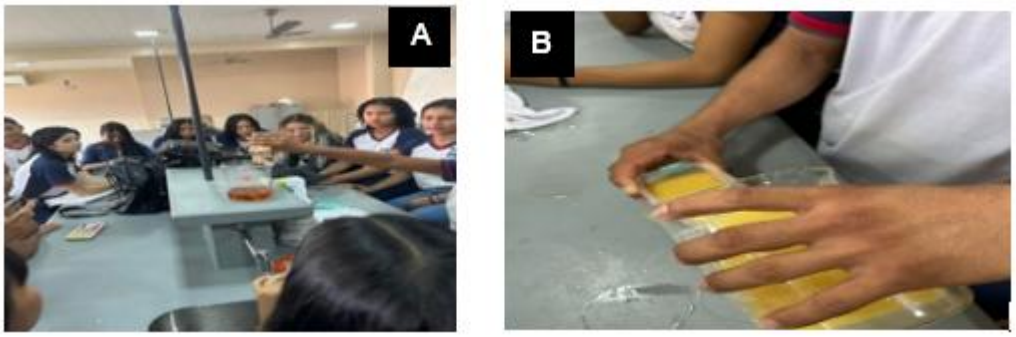
The initiative sought to integrate theory and practice, promoting environmental education and the appreciation of school spaces as learning and sustainability environments. According to Lima and Bernardes (2019), collective planting activities strengthen students' connection with the environment and contribute to improving the local microclimate and landscape.

RESULTS AND DISCUSSIONS

To develop the ecological soap, the students were directed to the laboratory of the Deputado Nicias Ribeiro educational institution, as shown in Figure 2. The following ingredients were added to the beaker: 150 ml of cold water and 250 ml of filtered used cooking oil. The ingredients were mixed for approximately 2 minutes, followed by the addition of caustic soda flakes. They mixed for another 15 minutes until the soda was completely diluted. 5 ml of lavender essence was added and mixed for 2 minutes. After all the ingredients were homogenized and the minimum mixing time had passed, the contents were poured into plastic containers for hardening.

There are many versions regarding the origin of soap. (Barbosa and Silva, 1995) report that the likely discovery occurred while ancient people were roasting pieces of meat. The melted fat possibly fell onto the ashes of the fire, rich in potassium carbonate, forming a kind of white curd. After being wetted with rainwater, it foamed, and over time it was used for cleaning, as it removed stains. The soap produced today is produced by the alkaline hydrolysis reaction of a special type of ester, which are triglycerides, a triester.

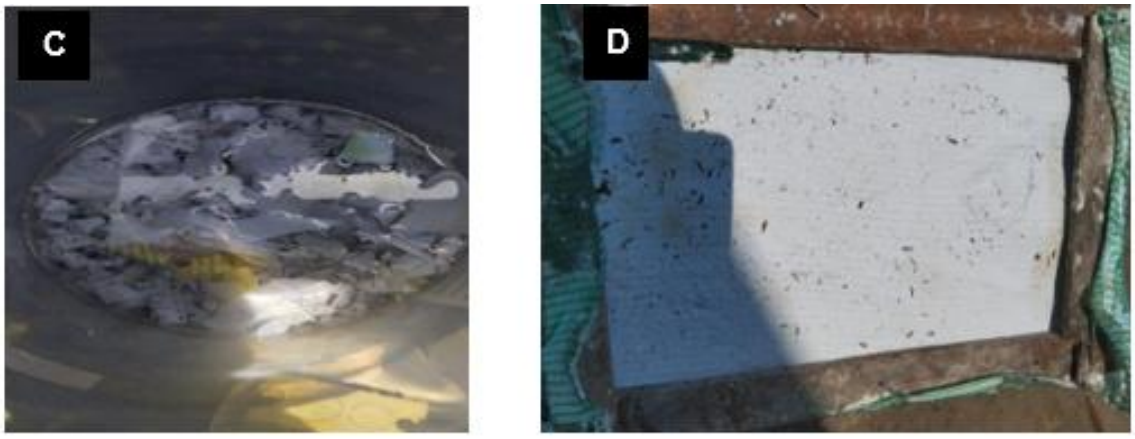
Figure 2. Production of Ecological Soap.



Source: Own authorship (2024)

The seed paper was created by reusing post-consumer waste at the school, as shown in Figures 3C and 3D. Previously used paper was dissolved in a bowl of water and placed in a blender, where it was shredded. The mixture was then placed in a bowl and then sieved through a screen. The seeds were then added, and finally, the product was hung on a clothesline to dry for an hour. Soares and Santos (2014) emphasize the need for EE-focused practices within schools and cite dry waste recycling as a way to reduce the volume of waste in landfills and dumps. This action encourages those involved to recognize the amount produced, rethink consumption, and create income-generating opportunities.

Figure 3. Preparation of Seed Paper



Source: Own authorship (2024)

The institution's tree planting was done with plants of the *Cenostigma tocantinum species,* which aims to promote socio-environmental benefits, such as improving air quality and increasing biodiversity, as shown in Figures 4-E and 4-F. This initiative raises students' awareness of the importance of environmental conservation. Students were taken to the selected

area for tree planting, then measured the spacing, and then planted and irrigated the trees.

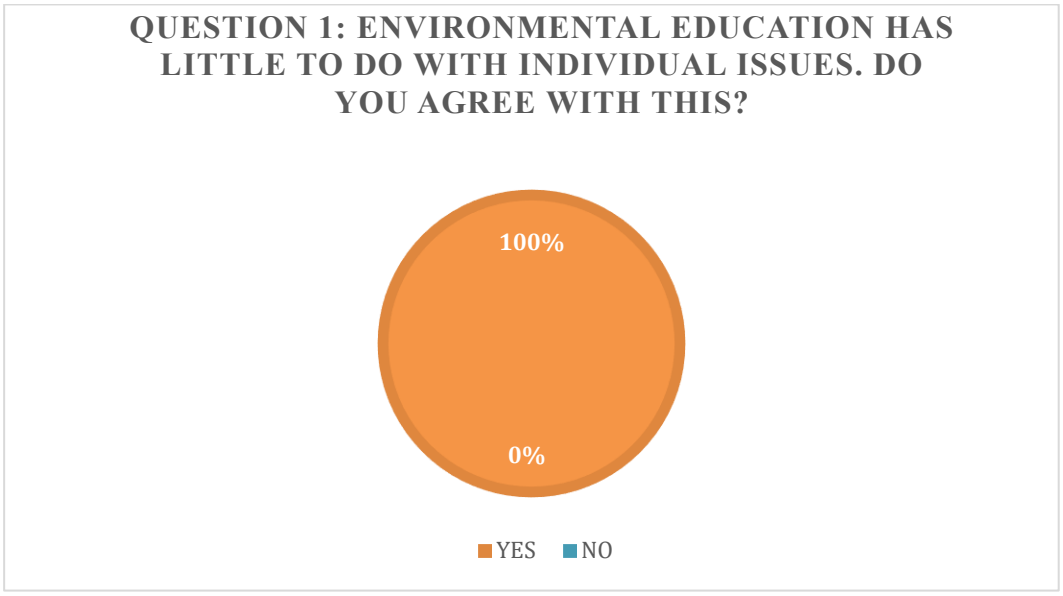
Santos et al. (2020) state that the afforestation of schools themselves is an environmental education tool of great importance for society, since the practices related to it are developed in a continuous, interdisciplinary and contextualized manner.

Figure 4. Institution's tree planting

Source: Own authorship (2024)

At the beginning of the project, students were asked to answer the following question: environmental education has little to do with individual issues. Do you agree with this? Graph 1 below shows the responses obtained:

Graph 1: Result of the first question about environmental education.



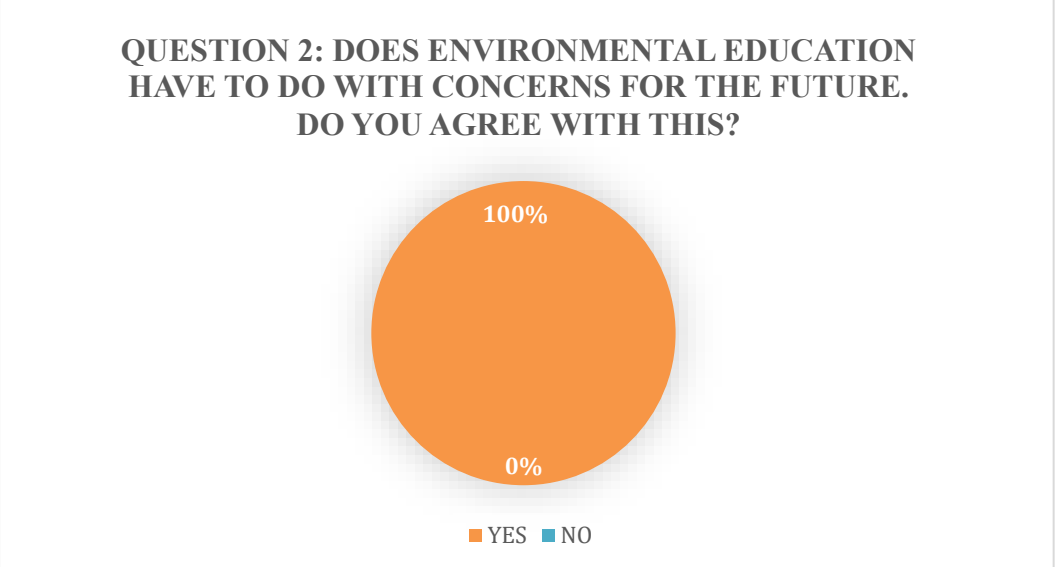
Source: Own authorship (2024)

In this context, it can be seen that students, when reflecting on their role in caring for the environment, demonstrate an understanding that social and environmental responsibility is shared. While recognizing the importance of structural actions, they also value their own daily actions—such as reducing plastic consumption, avoiding waste, or planting trees—as part of a broader, more integrated educational process.

Therefore, it's safe to say that environmental education isn't limited to individual actions, but it doesn't exclude them either. On the contrary, it should foster a connection between the individual and the collective, between the local and the global, and between critical thinking and practical action. In this sense, students' active participation in school environmental projects represents a path toward developing conscious, critical individuals committed to sustainability.

During the project implementation process, students were asked another question: Does environmental education have to do with concerns for the future? Do you agree with that?

Graph 2: Result of the question whether environmental education has to do with concerns for the future.



Source: Own authorship (2024)

The students' perception, as identified in the project, reveals maturity and alignment

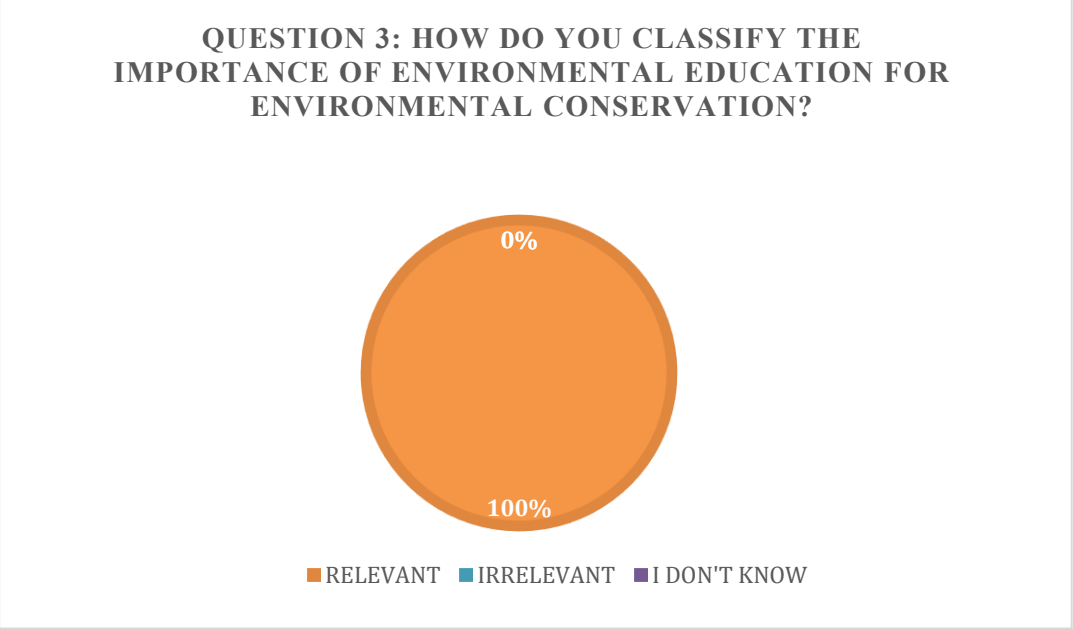
with this vision. The unanimous result, in which students affirm that environmental education is fundamental to developing conscious individuals and that today's actions reflect tomorrow, demonstrates that the pedagogical practice was successful in fostering a sense of ecological responsibility.

As Leff (2001) points out, environmental education should foster a mindset focused on complexity and the future, enabling individuals to understand the interdependence between nature, culture, and society. Thus, environmental education is not merely a response to immediate problems, but a commitment to profoundly transforming the relationship between humans and the planet.

Therefore, it is entirely valid to state that environmental education is intrinsically linked to concerns for the future. It prepares new generations to face environmental challenges with critical thinking, empathy, and commitment, fostering a culture of care, preservation, and ecological solidarity.

To finalize the project, students responded to questions about the importance of environmental education for environmental conservation.

Graph 3: Result of the third question, regarding the importance of environmental education for environmental conservation.



Source: Own authorship (2024)

In response to this question, students demonstrated an understanding that environmental

conservation depends not only on public policies or government actions, but also on changing everyday behaviors and raising collective awareness, starting at school.

According to Loureiro (2004), environmental education should be understood as an ongoing and political process that aims to transform the relationship between society and nature. In this sense, educating conscious students means empowering them as ecological subjects, capable of recognizing their role in the environment in which they live and intervening critically and purposefully.

Furthermore, Carvalho (2001) emphasizes that environmental education contributes to the development of an environmental ethic based on solidarity between human beings and their environment. This ethic goes beyond technical knowledge and encompasses social practices and environmental citizenship.

Therefore, it's safe to say that environmental education is essential for environmental conservation, as it serves as the foundation of society's formation, encouraging an understanding of the impacts of human actions and fostering a commitment to sustainability. The students' demonstrated understanding reinforces this perspective, as they recognize that conserving nature is everyone's duty, and that this commitment begins with education.

FINAL CONSIDERATIONS

In view of what has been mentioned, environmental education must be taught in schools not because it is a requirement of the Ministry of Education, but because we believe it is the only way to learn and teach that we, human beings, are not the only inhabitants of this planet, that we do not have the right to destroy it, because in the same way that we inherited the earth from our parents, we must leave it to our children.

Therefore, it is of great importance that the concept of environmental sustainability be worked on during formal education, helping students to build ecological awareness, in order to plan daily and local actions that can effectively contribute to the reduction of environmental degradation and its sustainability.

Furthermore, environmental education aimed at high school students can have a profound impact on student development, but it depends on careful planning and ongoing initiatives. Community integration, public policy support, and curriculum adaptation are essential to ensure lasting and transformative results. Ongoing discussion about the most effective methods, monitoring results, and adapting to local realities are essential to the success of these initiatives.

Therefore, the practices carried out require consistency and effort to continue generating positive results within society and guarantee accessibility for all.

It is concluded that these practices provided students with a vast experience in environmental education, especially in the reuse of materials that could otherwise be discarded, giving them a new purpose and increasing their awareness about caring for nature.

Practical classes focused on environmental issues are essential in training citizens who care for nature responsibly and contribute to the effective functioning of environmental policies, changing their daily habits.

When asked about the changes resulting from the knowledge acquired, most students reported that, although they already understood the importance of caring for the environment, they lacked clarity about their individual responsibilities. Therefore, this work allowed them to think more ecologically, recognizing that, while it is impossible to reverse the environmental damage already caused, new attitudes can minimize and transform the current chaotic scenario.

REFERENCES

ARROYO, Miguel Gonzalez. **A educação básica e o movimento social do campo**. In: ARROYO, Miguel Gonzalez; CALDART, Roseli Salete; MOLINA, Mônica Castagna. Por uma educação do campo. Petrópolis: Vozes, 2004.

BRASIL. **Lei nº 9.795, de 27 de abril de 1999**. Dispõe sobre a educação ambiental, institui a Política Nacional de Educação Ambiental e dá outras providências. Diário Oficial da União, Brasília, DF, 28 abr. 1999. Disponível em: Acesso em: out. 2024.

BRASIL. **Ministério da Educação e do Desporto**. Secretaria de Educação Fundamental. Parâmetros curriculares nacionais: introdução dos temas transversais e ética. Meio Ambiente e saúde. Brasília: MEC/SEF, 1997.

BARBOSA, A. B.; SILVA, R. R. **Química Nova na Escola**. 1995. Disponível em < http://qnesc.sbq.org.br/online/ qnesc02/quimsoc.pdf>. Acesso em: 09 nov. 2024.

CALDART, Roseli Salete (org). **Educação do campo**: identidades e políticas públicas. Poruma Educação do Campo. Brasília; São Paulo: ANCA, 2002.

CARVALHO, Isabel Cristina de Moura. Educação ambiental: a formação do sujeito ecológico. São Paulo: Cortez, 2001.

CHAVES, Rebeca Gomes. **Educação para o desenvolvimento sustentável**: práticas de

educação ambiental no ensino público fundamental das escolas de Fortaleza-CE; Fortaleza: UFC, 2017.

GRANDISOLI, E.; CURVELO, E.; NEIMAN, Z. **Políticas Públicas de Educação Ambiental**: História, Formação e Desafios. Revista Brasileira de Educação Ambiental, São Paulo, v. 16, n.6: pp.321-347, 2021.

GRANDISOLI, E.; CURVELO, E.; NEIMAN, Z. Políticas Públicas de Educação Ambiental: História, Formação e Desafios. **Revista Brasileira de Educação Ambiental**, São Paulo, v. 16, n.6: pp.321-347, 2021.

KOLB, D. A. Experiential learning: Experience as the source of learning and development. Englewood Cliffs: Prentice Hall, 1984.

LEFF, Enrique. Epistemologia ambiental. São Paulo: Cortez, 2001.

LIMA, A. F. N.; BERNARDES, B. R. **Papel semente: uma estratégia para aplicar a educação ambiental nas escolas**. Interfaces – Revista de Extensão da UFMG, v. 7, n. 1, 2019.

LOUREIRO, Carlos Frederico Bernardo. Educação ambiental crítica: contribuições para uma pedagogia da esperança. São Paulo: Cortez, 2004.

MELO, P. S. **Arborização Escolar**: percepção dos alunos de escolas públicas no ensino fundamental Boqueirão -PB. 2016. Trabalho de Conclusão de Curso (Graduação em Ciências Biológicas) -Centro de Ciências Biológicas e da Saúde, Universidade Estadual da Paraíba, Campina Grande -PB, 2016.

NASCIMENTO, Waddle Almeida. **Educação ambiental e ressignificação do espaço escolar**: estudo de caso em uma escola de ensino técnico do estado do Pará. Revista Prática Docente, v. 5, n. 1, p. 156-171, jan./abr.2020. Disponível em:http://periodicos.cfs.ifmt.edu.br/periodicos/index.php/rpd/article/view/534/264.Acesso em: 17 out 2024.

NASCIMENTO, Priscila Thais Bezerra do .et al. **Educação Ambiental e projetos interdisciplinares**: um olhar sob os anos finais do ensino fundamental. Revista Brasileira de Meio Ambiente,v.2, n.1, p. 18-26, 2018.

PINHEIRO, M.V.; SÁNCHEZ, L.R.; LONG, S.C.; PONCE, A. **Banco Interamericano de desenvolvimento**: Indicadores de Governança Ambiental para a América Latina e Caribe. 2020. Disponível em: <https://publications.iadb.org>. Acesso em: 07 nov. 2024.

REIGOTA, M. **O que é Educação Ambiental**. São Paulo: Brasiliense, 2009. 88 p.

SANTOS, L. R. et al. Arborização e jardinagem na Escola Estadual Professor Elídio Duque, Salinas-MG. **Revista Ciências em Extensão**, v.16, p.456-469, 2020.

SOARES C.F. SANTOS R.R. **Exercitando a educação ambiental através da coleta seletiva de lixo nas escolas**. Trabalho de conclusão do Curso Especialização em Educação na Diversidade e Cidadania, Universidade de Brasília Faculdade de Educação. Brasília, DF. 2014.

TRAJBER, R. SATO, M. **Escolas sustentáveis incubadoras de transformações nas comunidades**. Rev. eletrônica Mestr. Educ. Ambient., Rio Grande -RS, v. especial, p. 70-78, 2010.

VIZEU PINHEIRO, Maria; ROJAS SÁNCHEZ, Laura; LONG, Sarah Chamness; PONCE, Alejandro. **Indicadores de governança ambiental para a América Latina e Caribe: uma avaliação da governança ambiental na prática, na Argentina, Bolívia, Brasil, Colômbia, Costa Rica, El Salvador, Jamaica, Peru, República Dominicana e Uruguai.** In: CAUDILLO, Estefany; FRERICHS, Emma; FUENTES, Aurea María; GONZÁLEZ, Kirssy; MORALES, Jorge A. (Org.). Indicadores de governança ambiental para a América Latina e Caribe. [S.l.]: [s.n.], jun. 2020.