



Environmental education and sustainability: From the perspective of 9th grade elementary school students

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ABSTRACT

Teaching focused on Environmental Education (EE) and Sustainability contributes positively to the formation of people who are aware and committed to building a sustainable society. This work was developed with the objective of identifying and analyzing the perceptions about EE and Sustainability of students in the 9th grade of elementary school in a municipal public school, located in the city of Girau do Ponciano, Alagoas. The methodology used was qualitative and quantitative, and involved 32 students, of whom 65.6% were female, while the others (34.4%) were male. To capture the students' previous perception of the theme, an initial questionnaire was applied, followed by a didactic-pedagogical expository intervention, later, another questionnaire was applied to verify the impacts of the methodology used. The results show that although the students (65.6%) affirm that issues about EE and sustainability are addressed in their school, there is no project focused on these themes, according to the statement of 90.6% of the students. The students consider the topics of sustainability and EE important and most of them practice sustainable habits in their daily lives, however, most of them were not aware of the principle of the 5 R's. Therefore, it is notorious that the approach to the sustainability and EE themes should be more contextualized in the school environment to contribute positively to the acquisition of knowledge by these students, also helping to promote awareness and development of skills to deal with environmental challenges.

RESUMO

O ensino voltado para Educação Ambiental (EA) e Sustentabilidade contribui positivamente para a formação de pessoas conscientes e comprometidas com a construção de uma sociedade sustentável. Esse trabalho foi desenvolvido com o objetivo de identificar e analisar as percepções sobre EA e Sustentabilidade dos alunos do 9^o ano do ensino fundamental de uma escola da rede pública municipal, localizada na cidade de Girau do Ponciano, Alagoas. A metodologia utilizada foi qualitativa e quantitativa, e envolveu 32 estudantes, desses, 65,6% eram do sexo feminino, enquanto os demais (34,4%) eram do sexo masculino. Para captar a percepção prévia dos alunos sobre o tema foi aplicado um questionário inicial, seguido de uma intervenção expositiva didático-pedagógica, posteriormente, foi aplicado um outro questionário para verificar os impactos da metodologia utilizada. Os resultados demonstram que apesar dos alunos (65,6%) afirmarem que em sua escola são abordadas questões sobre EA e sustentabilidade, não existe nenhum projeto voltado para esses temas, conforme a afirmação de 90,6% dos alunos. Os discentes consideram os temas sustentabilidade e EA importantes e grande parte pratica hábitos sustentáveis no seu dia a dia, porém, a maioria destes não tinha conhecimento do princípio dos 5 R's. Portanto, é notório que a abordagem dos temas sustentabilidade e EA deve ser mais contextualizada no ambiente escolar para contribuir positivamente com a obtenção de conhecimentos desses alunos, auxiliando também na promoção da conscientização e no desenvolvimento de habilidades para lidar com os desafios ambientais.

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Introduction

Environmental Education (EE) works on the development for the formation of individuals who are concerned with the environmental issue in its various parameters, from conservation to the preservation of natural resources, always with an ethical and humanized look, with a view to an education focused on sustainability, outlining paths for the universalization of this knowledge for society (Dias & Dias, 2017).

The theme of education for the environment arises from the great human concern with environmental aspects, due to major natural events that have caused impacts on the environment over time, as a result of anthropic actions, such as the climate imbalance triggered by the excessive emission of gases from the burning of fossil fuels. Thus, it is necessary for each individual to be made aware of the responsibility they have in relation to the environment, instructing the population to use our natural resources in a sustainable way (Ferraro *et al.*, 2015).

Thus, by uniting the themes of environmental and social sustainability, they will contribute to the development process that exists on the capacity of nature to support human action and relate to people's quality of life, contributing to the process of building citizenship and people's participation (Gadotti, 2008).

According to Narcizo (2009), the school plays a fundamental role in the socialization of students about environmental issues, which should have been started at home, and the school would only complement, but most of the time students arrive at school late. In this way, schools are privileged spaces for socio-environmental development, through interdisciplinary activities with the objective of promoting environmental commitment and raising self-confidence, this education will shape new generations with a new vision of the planet (Narcizo, 2009).

Some projects seek to work on the issue of waste produced by society, principles as the basis of their actions and inspire techniques that can be worked on pedagogically, for example, the principle of the 5 R's that is part of an educational process that aims to change habits in people's daily lives in order to promote the awareness of these individuals for the correct use of solid waste generated (Guanabara *et al.*, 2008; Brasil, s.d.).

In view of the different social contexts that we are part of, it is necessary to have a broader and more timely look that fits each reality, so that there is an action that brings more pertinent and viable results to the population, and it is essential to understand the perception of students about the importance of EE, thus working in the acquisition, interpretation, selection and organization of classes, aiming at the students view of socio-environmental factors (Carvalho, 2009).

Therefore, it is of paramount importance to involve elementary school students in EE and sustainability issues, aiming to form conscious and responsible citizens, capable of making sustainable decisions and contributing to a more environmentally balanced future.

Due to the anthropic actions that have become excessive and harmful to the environment over the years, causing global warming and its serious consequences to our planet, the need arose to know what understanding students of an elementary school class have about EE and sustainable development. Thus, this article aims to identify and analyze the perceptions of students in the 9th grade of elementary school about EE and Sustainability.

Methodology

Methodological approach and study location

The study has a qualitative and quantitative character, through expository intervention and the application of questionnaires as a technique to collect data, taking into account that this methodology facilitates the simultaneous interrogation of a large number of people on a given topic in a short period of time and in its use lies versatility (Gressler, 2007). The qualitative approach of the present study comprises the interpretation of the collected data in order to analyze the object of the research in a more detailed way.

The research took place in a class of the 9th grade of elementary school of a municipal school in the city of Girau do Ponciano, a municipality belonging to the mesoregion of the agreste of Alagoas.

Data collection

To obtain the data, a questionnaire with 7 objective questions was initially applied to know the students perception of “EE and sustainability”. Then a didactic-pedagogical exhibition was held, through a multimedia projector, whose themes were: The principles of the 5 R's, the importance of practicing sustainable habits to contribute to the balance of the environment and some ideas of projects that can be carried out to promote EE and sustainability.

After this interactive activity between students and exhibitors, 4 questions were applied (three objective and one subjective), with the intention of understanding whether or not the didactic-pedagogical intervention contributed to a better perception of the theme presented. The questionnaires were applied through Google Forms in order to reduce the production of paper waste, however, for students who did not have access to the internet or cell phones, the questionnaire was applied in printed material.

This work was part of the extension activity inserted in the curricular component of the EA discipline of the Degree Course in Biological Sciences of the State University of Alagoas (*Universidade Estadual de Alagoas - UNEAL*).

Data analysis

The data were placed in the Microsoft Office Excel spreadsheet for better visualization and interpretation of the answers of the two questionnaires applied to the 32 students who were in the classroom in the 9th grade of elementary school.

Results and Discussion

Student profile

The study included 32 students aged between 14 and 16 years, around 60% aged 15 years and 65.6% were female (Tables 1 and 2).

Table 1.
Gender of students interviewed.

FEMALE	21 students	65.6%
MALE	11 students	34.4%

Note: Research data.

Table 2.
Age of students interviewed.

AGE: 14 YEARS	11 students	34.4%
AGE: 15 YEARS	19 students	59.3%
AGE: 16 YEARS	2 students	6.3%

Note: Research data.

The theme of EE and Sustainability, and its approach in the school environment

When asked if issues related to the environment and Sustainability are addressed in their school, the majority (65.6%) answered “YES”, however, when asked if there is any project focused on EE or Sustainability in the school, 90.6% stated that “THEY DID NOT KNOW”.

Thus, it was found that although they hear about the issues related to the theme, they do not know the EE projects carried out in the school, probably because they are applied in other classes or even because there is no constant practice of projects that can effectively contribute to a healthier environment; and as the current Pedagogical Political Project (PPP) of the school is being prepared, it was not possible to ascertain whether there are and how projects related to EE are developed.

Guimarães and Vasconcelos (2006), and Marques *et al.* (2022) portray in their investigations that a large part of the group of students who participated in the research stated that the topic is usually only addressed in isolated campaigns, sporadically or on commemorative dates.

The school environment is one of the first places for the process of raising awareness of future citizens about the environment, so EE should be approached frequently and introduced in an interdisciplinary way and at all levels of educational processes and, especially in the early years of schooling, since it is easier to make children aware, who still do not have habits and behaviors constituted on environmental issues (Medeiros *et al.*, 2011).

It is important to emphasize that there are several forms and spaces of teaching, however, according to Gonh (2006), the spaces can be classified, basically, as formal, non-formal and informal. The formal space is related to educational institutions (infant, secondary and higher), while the non-formal space can occur in other spaces, characterized by less bureaucracy. The informal is in a context of daily construction, not having an organized structure, in this way education is built in the set of social relationships of the individual with family, neighbors, friends and all the people he has contact with and who can pass on to him a teaching of life and not just content-based teaching.

In the third version of the National Common Curriculum Base (*Base Nacional Comum Curricular* - BNCC), certain skills for the development of students aimed at raising awareness are portrayed, including those related to consumption patterns, as described by the ability for the 9th grade of Elementary School to “propose individual and collective initiatives for the solution of environmental problems in the city or community, based on the analysis of successful conscious consumption and sustainability actions” (Brasil, 2018, p. 351).

When asked if they considered the theme “sustainability” as important to them, 31 students (96.8%) answered “YES” and only 1 student (3.2%) answered “NO” and through a scale from zero to ten, they were asked how important it is to work on the theme of EE in the classroom, the result was very positive, as shown in Table 3.

Table 3.

Degree of importance of addressing the EE theme in the classroom.

DEGREE	PERCENTAGE OF STUDENTS
0-3	-
4-7	3.2%
8-10	96.8%

Note: Research data.

The answers to the previous questions corroborate with the National Curriculum Parameters (*Parâmetros Curriculares Nacionais* - PCN's) that emphasize the importance of

working on EE, however, in Brazil the reality diverges from what the law determines, considering that in many educational institutions EE is addressed in few disciplines, when in fact, it should be worked on in all, because it is considered an interdisciplinary content (Medeiros *et al.*, 2011). In another more recent study, the fact still persists that EE for most students is mentioned only in the disciplines of Geography and Science (Carvalho *et al.*, 2020).

Regarding participation in some activity related to EE at school or outside it, 71.8% stated that they had already participated and the others (28.2%) stated that they had never participated. It is perceived that a considerable number of students had the opportunity to carry out some activity related to environmental issues, although it was implied that there is no effective EE project in the school, since the PPP was not consulted because it was under construction.

Thus, it is highlighted that schools are privileged spaces in the implementation of actions for educational practices, thus requiring classroom and field activities that will lead to reflection on the relationships of beings with each other, of the human being with himself and of the human being with his fellow human beings (Vasconcellos, 1997). These practices implemented in an interdisciplinary way lead to self-confidence, positive attitudes and personal commitment to the protection of the environment (Dias, 1992).

In relation to EE focused on sustainability, Brito (2012) emphasizes that education in non-formal spaces allows students to be the protagonist of their own knowledge, favoring the development of their autonomy to investigate and analyze information that is made available to them and favors the construction of their own knowledge.

The practice of sustainable habits and the principle of the 5 R's

Regarding the practice of sustainable habits, including separating and correctly disposing of recyclable/non-recyclable/organic waste, on a daily basis, 87.5% answered that they usually develop these habits in their daily lives, while 12.5% said they do not. In view of this data, it is important to highlight that the practice related to the proper disposal of solid waste, in addition to the conscious use of water and energy resources are habits considered sustainable, paths to be followed so that there is the preservation of the current quality of life and that of future generations.

Finally, when asked if they knew the principle of the 5 R's (reduce, reuse, recycle, rethink and refuse), 26 students (81.2%) answered "NO" and only 6 (18.8%) answered "YES". In this case, it is noted that the practice of separating waste in a way that does not cause damage to the environment can commonly occur, although there is no theoretical knowledge regarding the meaning of each of the 5 R's.

In order to minimize the damage caused by pollution, some intellectuals have presented preventive alternatives with the aim of contributing to the well-being of the

population. In this context, the principle of the 5 R's comes as an instrument to be used to solve environmental problems. According to the Ministry of the Environment (n.d.), the 5 R's are part of an educational process that aims to change people's daily habits, leading them to rethink their practices and reduce overconsumption and waste in favor of a common goal: The preservation of the environment.

The 5 R's are an evolution and expansion of the 3 R's policy, with the inclusion of "rethink" and "refuse". The expansion aims at environmental awareness, bringing behavioral changes with the objective of ensuring quality of life, preservation and environmental awareness including the individual as an integral part of the environment. In this context, Alkmin (2015, p. 34) states that "the policy of the 5 R's was created with the objective of seeking to expand the formation of an environmental awareness aimed at changing individual behavior to achieve a collective reversal".

In view of the above, it is notorious that these principles are simple techniques that can be used by all individuals in their daily lives, seeking to reduce the consumption of products and waste that are harmful to the environment, to reflect or rethink habits and also to analyze the need to purchase certain products. From this awareness, it will be possible to achieve well-being and guarantee a sustainable future for the current and future generation.

Didactic-pedagogical exposition and application of the second questionnaire

From an interactive and expository methodology with illustrations that permeated the concepts and importance of EE and the theme of sustainability, students ideas about sustainable projects emerged. After this stage, the students answered the second questionnaire, where they evaluated the performance of the undergraduate students in exposing the topics addressed, on a scale of grades, from 0 to 3 (0%), 4 to 7 (6.3%) and from 8 to 10 (93.7%). In this way, the questionnaire can bring researchers a view that allows them to collect a sample of knowledge, attitudes, values and behaviors, having a good analysis of it and thus increasing credibility (Chaer *et al.*, 2012).

When asked if the topics covered were passed on in an explanatory and easy-to-understand way, 100% of the students answered "YES". Thus believing that the didactic-pedagogical exposure of the way the themes were explained can contribute to knowledge and provide important moments of reflection and learning. Similarly, Araújo *et al.* (2018) reported in their study on the importance of dialogic tools in the classroom to foster the development of competencies that sustain our universe and curriculum.

In an overview, all students considered that the actions presented to promote EE are possible to be carried out in the school community, such as: The hanging garden, separation of garbage for selective collection, recycling, seed paper and use of oil to make soap. With the advancement of the studies, it is possible to find projects that can be developed at low cost, but

it is worth noting that the support of the school community and public agencies (Department of the Environment and Department of Education - *Secretaria do Meio Ambiente e Secretaria de Educação*) is necessary for a satisfactory result.

In addition, sustainable actions are of fundamental importance, and it is necessary that they begin to be carried out by government agencies, thus being able to demand more support for schools, which often suffer from this lack of resources and information, for a better execution of projects, which will cover eco-management, which involves urban or rural infrastructure, comfort that is related to landscaping and health that is concerned with air and water quality (Salgado *et al.*, 2012).

Thus, when addressing themes focused on sustainability, it is necessary to take into account the economic, cultural and social dimensions, idealizing the best proposals, which can be carried out in each reality, but which have a relevant impact on the lives of the individuals who will be present in the actions (Ruscheinsky, 2009).

Final Considerations

The data obtained in the study showed that the school works in a theoretical way on the importance of promoting EE to achieve a more sustainable environment, and then a more practical action is necessary, since the students showed interest in working with projects aimed at environmental conservation. In addition, it is important to highlight the difficulties encountered in the educational institution to carry out their actions, however, with the advancement of studies, it is possible to develop works that do not require high-cost materials, but that have a positive impact on the construction of a sustainable environment.

Thus, it is suggested that schools can seek partnerships for the execution of sustainable habits and actions, in order to collaborate with the social and environmental environment of the school community. Finally, it is indisputable that the pedagogical practice directed to EE must be continuous and interdisciplinary, not limited only to commemorative dates, always promoting projects to be worked on by students, not only in the school environment, but also extend to the places where they live.

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