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Environmental education in teacher training: methodologies for an interdisciplinary practice

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ABSTRACT

Over the past few years, Environmental Education has been incorporated as one of the possible actions to collaborate with the transformation of the pattern on socio-environmental degradation. In this sense, the objective of this work is to present different methodological strategies for the development of Formal Environmental Education and to evaluate how they can contribute to the process of teacher training. This project was applied to 2nd year students of a Teacher Training Course at a public school in the city of Dois Vizinhos, Paraná, Brazil. For data collection, a structured pre-questionnaire was applied to verify the prior knowledge of those involved about the possible methodological techniques of Environmental Education. Afterwards, there was a lecture on the history and concepts of Environmental Education, preservation, environmental impacts and sustainability. To implement the proposal, several practical activities to raise awareness of Environmental Education were carried out in the Parque das Aves and Parque Nacional do Iguaçu, in Foz do Iguaçu - PR. At the end of the activities, a post-questionnaire was applied to access the project's intervention. The use of different methodological strategies for Environmental Education proves to be effective in the teacher training process, which is demonstrated through the reports of the participants. The results obtained show the relevance of carrying out projects on Environmental Education in the training of teachers, as it is at this time that, in a more fruitful way, the awareness of professionals, future educators, occurs. In the future, in their pedagogical practice, they will contribute to a change in thinking and behavior in search of sustainability.

KEYWORDS: Formal education. Teaching-learning. Sustainability.

INTRODUCTION

The term “Environmental Education” was first registered in 1948, at the meeting of the International Union for the Conservation of Nature (IUCN) held in Paris. However, it was after 67the Stockholm Conference in 1972 that the insertion of the theme on the international agenda was attributed. The discussion about its practice in the school environment became intense from the '90s, at Rio-92, in several countries. In 1975, the United Nations Educational, Scientific and Cultural Organization (UNESCO) launched the “International Environmental Education Program” maintained until 1995. This program was reinforced by the conferences of Tbilisi, in 1977, and of Rio-92, bringing the discussion of Environmental Education into practice in the school environment in several countries (PEDRINI, 1997).

According to Sato, Environmental Education (EE) can be defined as:

> "[...] a process of recognizing values and clarifying concepts, aiming at the development of skills and modifying attitudes towards the environment, to understand and contextualize the interrelationships between human beings, their cultures, and their biophysical environments” (SATO, 2002, p. 23).

There are several definitions of EE and many of them complement each other. It can be defined as a process by which people can learn about the functioning of the environment, the use of natural resources, their dependence on it, and how to promote its sustainability (DIAS, 2004).

A procedure that culminates in the recognition of values, from the learning of concepts and development of skills to modify attitudes and actions towards the environment, a humanized action that can culturally improve and expand an entire nation and make the world a more sustainable place for all living beings (CHEN *et al*., 2018). Environmental awareness is, therefore, a necessary action to modify a framework of growing socio-environmental degradation, in which several species, including humans, live in unhealthy conditions for survival.

The school environment was one of the first spaces to integrate sustainability into their curricula, studies show that EE positively influenced the environmental awareness of students in the search for sustainable development (CARCELÉN *et al*., 2021). It is in formal education that this process of building awareness can be carried out in the long term and continuously until adulthood when the person has already incorporated this cause and way of life as their own.

The teaching system developed in formal education is the institutionalized educational process that takes place in schools, with previously established curriculum structure, teacher training, and content (GOHN, 2006). Thus, EE applied to formal education is fundamental in the process of teacher education, and can thus help to integrate the environmental concerns of these future teachers into their professional work context (CARCELÉN *et al*., 2021).

One of the greatest fields of action of Environmental Education is the school, a space capable of creating alternatives and conditions that encourage students to have citizenship concepts and attitudes, be aware of their responsibilities, and, above all, be part of the environment. In this aspect, the school can be constituted with the objective of forming conscientious citizens capable of facing socio-environmental challenges (CARCELÉN *et al*., 2021).

Formal Environmental Education, as part of the integral human being formation, aims to raise awareness, the search for behavioral change, the formation of more active citizens, and also the awareness of the teacher as the main promoting agent. It is capable of producing means and conditions for it to be a continuous and permanent process, through globalizing interdisciplinary actions, parallel to the instrumentation of teachers and the integration between school and community, aiming at environmental protection in harmony with sustainable development (DIAS, 2004).

In Brazil, the inclusion of this practice in formal education is supported by Law 9795, of April 27, 1999, which deals with the National Environmental Education Policy which guarantees that it must be developed as a continuous, permanent, inter and transdisciplinary educational practice, at all levels and modalities of teaching (BRASIL, 1999).

In order for it to be effectively implemented in the school environment, future teachers must be encouraged and receive adequate training. The training of these professionals also provides for the insertion and pedagogical contextualization of Environmental Education, preparing them for an integrated and transforming practice in the teaching action.

For this reason, it was sought here to present the importance of the theme in the teacher training process, for the familiarization of future teachers with environmental issues.

BRIEF HISTORY OF ENVIRONMENTAL EDUCATION

Environmental Education is a characteristic phenomenon of the second half of the 20th century, as one of the strategies to face environmental problems. In 1949, attention was already drawn to the need for ethical use of Planet Earth's resources. In the post-war period in the 1950s/60s, human beings, driven by technological advances, expanded their capacity to produce changes in the environment, especially in more developed countries, in the following decade the negative results on the environment were already visible (REIGOTA, 2009).

Among these events, movements to defend the environment began, the book Silent Spring, released in 1962 and written by the biologist Rachel Carson, is considered the primary milestone, with wide worldwide repercussions regarding the need to reverse the described situation (EHIERS, 2009). In 1968, in the United Kingdom, the Council for Environmental Education was created.

In 1972, the Club of Rome published the report “The Limits to Growth”, a warning about the growing world consumption. Months later, the United Nations Conference was held in Stockholm, Sweden, which produced the “Declaration on the Human Environment” and its “World Action Plan”, whose objective was to encourage and guide humanity towards the preservation of the human environment.

Environmental Education, for the first time, was recognized in this declaration as essential to solving the international environmental crisis, in addition to encouraging teacher training (PEDRINI, 1997). UNESCO followed these recommendations and promoted three international conferences on Environmental Education throughout the 1970s/80s.

The first was held in 1975 in Belgrade, known as the International Conference on Environmental Education, which resulted in the Belgrade Charter, one of the most important documents produced in that decade, encouraging a new environmental ethic focused on eradicating poverty and illiteracy, hunger, pollution, exploitation, and human domination, advocating the reform of educational processes and systems and global ethics (PEDRINI, 1997).

The second international conference promoted by UNESCO had the collaboration of the United Nations Environment Program (UNEP) in 1977. It was the First Intergovernmental Conference on Environmental Education, held in Tbilisi, Georgia, considered a fundamental milestone evolution of the concept of Environmental Education. As a result comes to the Declaration on Environmental Education, with 41 recommendations that stand out for the international union of efforts in pursuit of the common good (DIAS, 2004).

Known as the National Congress on Environmental Education and Training – UNESCO/UNEP, the third international conference was held in Moscow, in 1987. Assessing the difficulties and achievements in the area of Environmental Education since the Tbilisi Conference, it began an important process of inclusion of Environmental Education in the educational systems of several countries. (TELLES *et al*., 2002).

The second World Conference on Environment and Development took place in Brazil in 1992, Rio 92. The aim was to promote a new style of sustainable development on a global scale. EE was recognized as the main instrument for the transformation of the current development model, as well as for the construction of sustainable development (PEDRINI, 1997).

In 2002, in Johannesburg, South Africa, 191 countries gathered for the United Nations Conference on Environment and Sustainable Development, known as RIO+10, in reference to the 10th anniversary of Rio 92. Three supreme goals were announced to be achieved: the eradication of poverty, the change of unsustainable patterns of production and consumption, and the protection of natural resources (PHILIPPI; PELICIONI, 2014).

On an initiative of UNESCO, from 2005 to 2014, the Decade of Education for Sustainable Development was lived, aiming to integrate the principles and values to all aspects of education and learning aimed at more sustainable practices of life (GADOTTI, 2008).

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In 2012, there was the Rio+20 Conference, which reaffirmed the political agreement of nations and sustainable development. At this event, goals were defined with the objective of ensuring social well-being, environmental protection and economic growth. All agreed to make a commitment for all nations present in recognizing that affordable good quality education was the way to achieve social inclusion and sustainable development through the document “The Future We Want” (VELASCO, 2013).

Under the influence of the world scenario, Environmental Education in Brazil emerged in the 1980s with the creation of Federal Law n. 6.938/81, which

establishes the National Environmental Policy (PNMA), the topic is one of the curricular components that contribute to awareness of environmental issues and will need to be offered at all levels of education (Formal Environmental Education) and in the community (Non-formal Environmental Education). The main goal is to enable society to participate in the defense of the environment (art. 2, X) through the dissemination of data and information, public awareness formation on the need to preserve environmental quality and ecological balance (art. 4°, V), among other objectives of the PNMA (BRASIL, 1981).

Enacted in 1999, Law No. 9795 deals with the National Environmental Education Policy (PNEA). According to the aforementioned law, everyone has the right to EE, an essential and permanent component of national education. It must be carried out in an articulated manner at all levels of education, under the responsibility of the National Environment System (SISNAMA), the Educational System, the media, the Public Power, and society in general (BRASIL, 1999).

In 2015, the United Nations (UN) prepared the Sustainable Development Goals (SDGs), which should be achieved by the year 2030. The document contains 17 objectives and 169 goals, was signed by 193 countries, aims to eradicate poverty, extreme hunger and ensuring economic development combined with the conservation of natural resources (UN, 2015).

MATERIAL AND METHODS

The present study was carried out with 20 2nd year students from the Teacher Training course at Leonardo da Vinci State School, in the city of Dois Vizinhos, Paraná. It was previously approved by the Research Ethics Committee of the Universidade Tecnológica Federal do Paraná (UTFPR) under the number CAAE 99320718.9.0000.5547.

The Normal Teacher Training is a professional training course, on a high school level, lasting four years. It is offered by the state education system of Paraná, in the Full Curriculum modality, integrated with High School, aimed at students finishing elementary school. Its objective is to train teachers to act as teachers in Kindergarten and the Early Years of Elementary School. The curricular structure allows students to have contact with common subjects at the national level, which allows them to gain knowledge for the continuation of their studies and provides specific and professional training for teaching practice.

During the month of November 2018, activities consisting of four pedagogical meetings were carried out. To carry out the practical part of the research, different methods of approach were used, including technical visits, monitored visits, lectures, ecological trails, and dynamics. A theoretical and quantified approach was used, applied to a group of students and the measurement of the result was necessary for an effective response to the results. The use of qualitative and quantitative research in the field of Environmental Education is increasing. This is due to the fact that Environmental Education connects research in the field of Education with Biology, due to the proximity and identification with the sub-areas of knowledge of both fields of research (KUSS *et al.*, 2015).

For data collection, a pre-questionnaire was used, before the project was implemented, and a post-questionnaire of a quali-quantitative character with open and closed questions, aiming to evaluate the effectiveness of different

methodologies applied in Environmental Education in the process of teacher training of participants.

To facilitate the discussion of the work, the results obtained were evaluated according to content analysis, based on three stages: pre-analysis, material exploration, and treatment of results (BARDIN, 2011).

The activities were developed in different stages. Firstly, some initial training activities in the classroom. Then, the students were taken on a field visit to Parque das Aves and Parque Nacional do Iguaçu, located in the city of Foz do Iguaçu, Brazil.

Methodological Steps Description

Lectures

During the first stage, a lecture entitled "A brief overview of Environmental Education" took place. It happened on November 17, 2018, lasting one hour. Lectures that work on issues related to Environmental Education are of paramount importance as it has the ability to develop knowledge, skills, and attitudes in the human being, aimed at preserving the environment, the citizen starts to have new concepts and thoughts forming an innovative conscience (FERREIRA; PEREIRA; BORGES, 2013).

Dynamics

Several dynamics were developed, which will be presented in this topic on to the chronological order of their execution.

The first dynamic applied was the “Chain of Contamination”, developed in the classroom, right after the first lecture. This activity consists of a dynamic in which the participants represented animals (hawk, frog, and grasshopper) from a food chain, to represent the process of contamination by pesticides.

The main goal of this activity is to promote an understanding of how pesticides accumulate through food and their impacts on nature. At the end of the dynamic, the damage that pesticides cause to the environment was discussed and how they accumulate along the food chain, thus enabling knowledge of the process of contamination of food chains.

The second dynamic called “Web of Life” was performed on the ecological trail of Poço Preto during the technical guided tour. Those involved in this activity represent the elements of an ecosystem, to simulate the interdependence between them. In the end, it is possible to reflect on the importance of each element of the ecosystem, on the consequences of the extinction of species, and the environmental impacts caused by anthropic action on the environment.

Guided technical tour and ecological trail

In the second stage, the research volunteers participated in pedagogical activities in a practical way, through a technical guided visit to Parque das Aves, with the “SOS Fauna” guided trail pedagogical route, prepared by the Zoo's Environmental Education team. Parque das Aves is a conservation center for birds of the Atlantic Forest, where research, conservation, leisure, and education actions are developed.

Initially, the environmental educators from the Environmental Education department at Parque das Aves welcomed them and explained about: A) fauna and flora conservation strategies. B) Endangered species from the Iguaçu National Park. C) The regional hunting culture and the exploitation of forests. D) The impacts of human beings and their consequences to the environment. E) Ways to conserve forest life and how this is beneficial to society.

On the second day of visits, the students were taken to the Iguaçu National Park, where guided technical visits were carried out on the following ecological trails: alternative trail of Poço Preto, the trail of Banana trees, and a visit to the tourist trail of Iguaçu Falls, with duration 8 hours. On-site, the group was welcomed by the Park guides and received instructions on security and care within the UCs.

Founded in 1939, through Decree n. 1.035 of 01/10/39, being the second Brazilian National Park created, the Iguaçu National Park is considered the largest Protected Area (PAs) in the Atlantic Forest of Interior domain, being one of the last preserved remnants of this type of vegetation in the south of the country, with 185,262.5ha. Poço Preto trail, widely explored by ecotourism, crosses two types of vegetation formations, the Seasonal Semideciduous Forest and Pioneer Alluvial Formations (RODOLFO; TEMPONI; CÂNDIDO, 2008).

Poço Preto trail is about nine kilometers long and is located within the Iguaçu National Park. To carry out this activity, the partnership with a team of guides from Poço Preto was essential. They allowed the project's executing team to carry out the activity in a personalized way. For this purpose, the trail was divided into five stations, each with stops for interaction between the guide, the project's executors and the target audience. At each station, a different topic was discussed, related to environmental issues, described in Chart 1:

Chart 1 – Description of the stations developed on Poço Preto trail

Station	Subject	Objetive
1st Station	Environmental Education and the relationship between human beings and other living beings.	Reflect on the role of human beings in conserving their surroundings.
2nd Station	The ecological role of the Iguaçu National Park for biodiversity.	Understand the importance of maintening PAs for biodiversity.
3rd Station	Illegal hunting and extinction of native species (addressing the cultural issue of hunting, very common in the western region of Paraná).	Reflect on the consequences of illegal hunting and native species.
4th Station	Unbridled growth of environmental pollution.	Raise awareness about environmental pollution.

Source: Authors (2021).

After the activities of Poço Preto Trail, there was a trip by twin-engine boat on the Iguaçu River to the Banana Tree Trail, where the students had direct contact with the biodiversity of the Atlantic Forest. Soon after, the Banana Tree Trail was carried out using an electric vehicle. This trail has 1.5 km and, finally, the visit was made on the main access trail to the Iguaçu Falls.

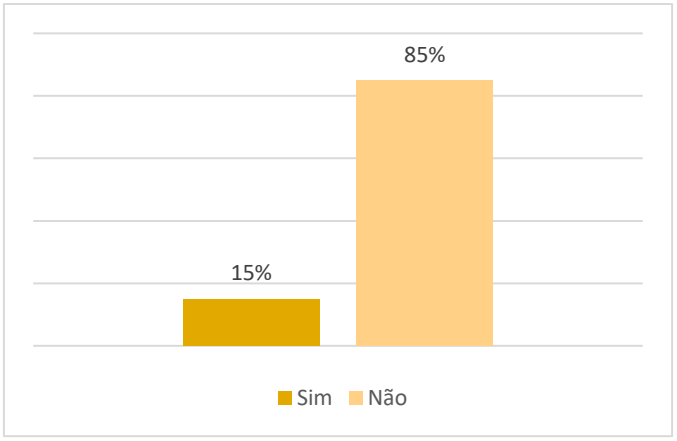
RESULTS AND DISCUSSION

Data analysis

The study participants were between 15 and 18 years old and all female.

The results are initially presented based on the responses obtained in the investigative questionnaire. The first question in the pre-questionnaire investigated participation in Environmental Education projects in the school environment. The results are presented below, as shown in Figure 1.

Figure 1 – Responses from the participants, in percentage, referring to participation in some Environmental Education project in the Teacher Training course



Source: Authors (2021).

Environmental Education is a process that must be continuous. The development of projects is a very effective tool for practical activities, but it can be seen from the results that few Environmental Education projects are developed.

Practices that promote environmental awareness are essential in the teacher training process, as they have a direct impact on society development, therefore, educational institutions must promote education focused on sustainability, and so the students can acquire necessary skills for future applicability in the professional context (MALIK *et al*., 2019).

Different environmental themes can be addressed through lectures, 75% of respondents said they participated in lectures at the institution, however, most of the time the theme was about garbage disposal and recycling. Lisboa and Kindell (2012) report the importance of promoting debates and rethinking values to cultivate a sustainable, socially and economically reflective society.

In general, the issue involving solid waste is widely discussed in schools. According to Moro (2017), the topic is intriguing, as the student easily perceives the problems caused by garbage, such as increased infestations, floods, stink, water and soil pollution, and often feels its effects directly. Still, according to the author, environmental issues are becoming fashionable and most of the time this theme ends up being approached superficially and not with the necessary depth and seriousness.

The third question asked about student participation in technical visits of an environmental nature. In the pre-questionnaire, it was possible to identify that until the time of this research, none of the interviewees had participated in a

practical activity outside the school environment. Visits to PAs act as fundamental tools in the environmental awareness process, primarily at the EA. This statement is justified because it is believed that this environment is more conducive to awareness due to the possibility of contact with nature and, thus, the participant is conditioned to perceive, observe and analyze the environment through which they are passing, which may arouse the desire to preserve and conserve (DIAS 2004).

Next, the students responded about the importance of Protected Areas for environment preservation, of which only 30% responded. Some of the answers obtained in the pre-questionnaire are highlighted, as shown in Chart 2. The answers obtained in the post-questionnaire, that is, after the execution of the present study, presented greater complexity and theoretical basis, as we can see below:

Chart 2 – Comparison between questions before and after activities regarding the importance of Protected Areas for the preservation of the environment

Pre-questionnaire answers	**Post-questionnaire answers**
“Don’t know”	*"Conserving different species of plants and animals (ecosystems) so that they live in harmony, important for climate balance and maintenance of air quality"*
“Preserving things”	*"Keep alive the essence of something, both for scientific knowledge and for preservation"*
“Important to preserve what is left”	*"Preserving biological diversity and associated genetic resources and conserving species, prolonging life, through care so that there is no extinction”.*

Source: Authors (2021).

EE activities in Protected Areas are of great importance for the formation of individuals, as they encourage habits aimed at the preservation and conservation of nature. For Nunes, França, and Paiva (2017), among the competencies of Environmental Education in the ecological aspect, prevalent in the PAs, the awakening to issues related to the protection, preservation, and conservation of natural resources stands out. Also, according to the authors, practical activities in natural environments are effective tools for a meaningful experience in EE, as they result in the improvement of knowledge and interest in conservation.

It is possible to see the evolution in the responses of students about the real importance of PAs through practical experience. As mentioned by Pires *et al*., (2014), Environmental Education practices in PAs seek to feed and explore their didactic potential, whether by disseminating information about the unit, formally promoting the training of the main actors or simply enriching the visitation experience.

All interviewees stated that they had not participated in any dynamics involving the subject of EE. After carrying out the dynamics, those involved were invited to report the importance of activities like this. Among the justifications, the following stand out, shown in Chart 3.

Chart 3 – Question about the importance of dynamics involving EE in the Teacher Training course

Post-questionnaire answers
Student A: *"Because it is through practice that the assimilation of the concept and the importance of Environmental Education is promoted".*
Student B: *"It's in the most extroverted and practical way, you capture better what you want to be understood".*
Student C: *"It helps us to understand the proposed subject in a playful way".*

Source: Authors (2021).

The answers are in line with the importance of pedagogical dynamics for the development of environmental awareness, through EE, in processes that connect practice and playfulness. For Guerra *et al*., (2018), by involving students in practical and playful activities, independent, proactive, logical and creative behaviors can be motivated. Still, according to the author, participatory learning is also a method to achieve critical thinking, working in groups and sharing knowledge. In addition, practice and play can serve to captivate students even more.

Implementing practical activities to introduce this theme is essential, as it is possible to sensitize students about environmental problems, the importance of sustainability, in addition to stimulating and strengthening critical awareness about the environment (VIANA *et al*., 2020). In this aspect, the school can be constituted with the objective of forming conscientious citizens capable of facing socio-environmental challenges (SANTOS; SANTOS, 2016).

To complete the application of the questionnaires, the students were asked about how EE activities contributed to their teacher education process. It was possible to observe in most of the answers that the goal of sensitizing the students about the environmental issue was achieved, as shown in Chart 4.

Chart 4 – Question regarding the contribution of EE activities carried out during the project to the teacher education process

Post-questionnaire answers
Student A: "*I became aware of the importance of the environment for all generations and for all species of animals, where I will be able to take a little of what I learned to my future students*".
Student B*: "It helped to sensitize me about the need to take care of the environment and to reproduce this knowledge when acting as a teacher*".
Student C: "I got touched regarding environmental issues, and I will take the didactic examples for application with children".

Source: Authors (2021).

Awareness is essential, according to Dias (2004), as EE activities are the most appropriate tools to sensitize students about environmental problems and promote changes in habits and behaviors that are harmful to the environment. The different methodologies allow for an assimilation between acquired knowledge and perceptions in the natural environment, providing more positive situations and conditions for reflection. Souza (2014) states that EE is not simple informational education, but procedural and as such aims at transformations: in

behavior, posture, critical vision, ethical conduct, construction of ethical values that contribute to the process of environmental conservation and preservation.

There are different ways to include the environmental theme in school curricula. It is possible to include environmental themes in artistic activities, practical experiences, activities out of the classroom, production of local materials, projects or any other activity that leads students to be recognized as active agents in the process that guides environmental policy (NUNES; FRANCE and PAIVA, 2017).

Thus, it is the role of teachers to draw new methodologies together that favor the implementation of EE through interdisciplinary practices. Therefore, it is important that teacher training classes start their professional life by experiencing different methodologies nowadays, so that the desire for transformation and motivation remain, in the face of possible adversities that may arise.

It is believed that activities like these may be starting points for the inclusion of Environmental Education in teacher training courses. However, we must not forget that this education must be continuous and not just organized into sporadic and isolated activities, as Environmental Education, as a cross-cutting theme, integrates various fields of knowledge, generating an understanding of the environment in which we are inserted and how we can interfere in it.

Perception of field experience

During the lecture at Poço Preto trail, it was possible to observe the interaction and participation of those involved in the discussions.

In general, actions that develop creative employment in the exploration of knowledge and/or activities that provide a new form of appropriation of the natural environment, even without the direct influence of this environment, are also considered important in the environmental training of students (SATO, 2002; DIAS, 2004).

During the guided tour held at Parque das Aves, students were able to visit different vivarium. The trail has several immersion vivarium, in Viveiro Paraíso das Araras, for example, the group had a unique experience, being in contact with dozens of colorful macaws, which flew in what is the largest macaw vivarium in the world (PARQUE DAS AVES, 2018). At all stops, interaction was held between the group and the environmental educators.

When these EE activities are practiced in a systematic way and in contact with nature, it is believed that they can reach different levels of efficiency and greater potential to promote knowledge and interest in environmental issues, as there is an affective relationship between students and the natural environment, promoting environmental awareness (NAVARRO; TIDBAALL, 2012).

Therefore, the insertion of practical actions with nature is configured as an effective and motivating practice, capable of making EE a transforming action and achieving the recommendations proposed during the 1997 Tbilisi conference (DIAS, 2004; NAVARRO; TIDBALL, 2012).

Through the connection with the Atlantic Forest, the participants were able to feel and experience the biological, ecological and social aspects that involve the biome and its species, in addition to understanding the importance of the Parque das Aves for the conservation of several endangered animals. The monitored visits

are aimed at addressing socio-environmental issues related to threats to biodiversity, providing the awakening of interest and a sense of belonging, which make it possible to engage in environmental protection (PARQUE DAS AVES, 2018).

Regarding the guided technical visit, Fritzen, Lima and Borges (2011) state that this methodological strategy is present in the oldest PA management plans, and that, as a pedagogical resource, a pre-walk script is usually established through a self-guided tour with strategic stops, so that it is possible to visualize relevant environmental aspects. Visiting an ecological trail has great potential to stimulate the capacity for observation and reflection, in addition to generating greater sensitivity in students (TIDBALL, 2012).

In closing, the importance of Environmental Education for nature conservation and the importance of PAs for biodiversity were highlighted. To complement this, the "Web of Life" environmental awareness dynamic was carried out with the students, where the students represented the elements of an ecosystem, to simulate the interdependence between them (Figure 2).

Figure 2 – Photo referring to the Web of Life dynamics, on Poço Preto trail, in the Iguaçu National Park

Source: Authors (2021).

According to Dias (2004), EE should allow understanding the complex nature of the environment and interpreting the interdependence between the various elements that form it. The dynamics encourage cooperation, union, respect, self-knowledge, socialization and led by the facilitator, promote the genesis of learning in the environmental area and generate the intellectual growth of the student, raising the necessary awareness to make them able to multiply knowledge acquired (CORDULA, 2010).

Finishing the activity, a visit to the most famous trail in the National Park was made, the Iguaçu Falls trail, visited by more than 1 million tourists. Participants were able to experience an immersion in nature, through the proximity of the immensity of the waterfalls of the Iguaçu River.

Technical visits are in fact interesting experiences for the insertion of students in different environments and realities and, in this way, promote the generation of a critical spirit with greater responsibility towards the world in which they are living (FRITZEN, LIMA and BORGES, 2011).

The educational function of the PAs is highlighted during the visits. On these occasions, fauna, flora, landscape, historical, geological, ecological and management aspects, among many others, can be unveiled before the visitor's gaze.

FINAL CONSIDERATIONS

The insertion of EE through practical activities such as monitored technical visits to zoos and PAs, proved to be efficient in raising awareness of future educators and awakening a more participatory awareness of human beings in relation to the environment that surrounds them.

A progress was seen in the environmental perception of future educators after using different methodologies such as lectures, dynamics, monitored visit, technical visit to PAs and ecological trail, allowing us to state that the activities proposed in this work were effective as a way to provide an experience on EE in the training process of the 2nd year students of a Teacher Training Course.

The importance of using different methodologies to work with EE is evident. It is perceived that it is of great importance to carry out projects on EE in the Teacher Training Course, as it is an awareness-raising tool for future educators, in which it reinforces their role in changing thought and behavior, demonstrating the importance of in loco experiences. In the future, these professionals will have the opportunity to make a difference in the professional context.

An educator with full human and scientific training becomes an organic professional, capable of integrating, improving and developing all the institutional apparatus that brings him together. The opportunity for a different training for future educators can sensitize many lives in the future, those of their students and colleagues and of the families that comprise them. It was like that with several themes and directions that changed culturally and economically the society of a developing country like Brazil.

EDUCAÇÃO AMBIENTAL NA FORMAÇÃO DOCENTE: METODOLOGIAS PARA UMA PRÁTICA INTERDISCIPLINAR

RESUMO

A Educação Ambiental ao longo dos últimos anos tem sido incorporada como uma das ações possíveis de colaborar com a transformação do padrão de degradação socioambiental. Neste sentido, o objetivo deste trabalho é apresentar diferentes estratégias metodológicas para o desenvolvimento da Educação Ambiental Formal e avaliar como elas podem contribuir para o processo de formação de professores. Este projeto foi aplicado com estudantes do 2° ano de um Curso de Formação de Docentes de um Colégio público do Município de Dois Vizinhos, Paraná, Brasil. Para coleta de dados foi aplicado um pré-questionário estruturado para verificar o conhecimento prévio dos envolvidos acerca das possíveis técnicas metodológicas de Educação Ambiental. Após, realizou-se uma palestra sobre o histórico e conceitos da Educação Ambiental, preservação, impactos ambientais e sustentabilidade. Para a execução da proposta, foram realizadas diversas atividades práticas de sensibilização para a Educação Ambiental no Parque das Aves e Parque Nacional do Iguaçu, em Foz do Iguaçu - PR. No final das atividades foi aplicado um pós-questionário para avaliar a intervenção do projeto. A utilização de diferentes estratégias metodológicas para Educação Ambiental evidencia-se eficaz no processo de formação de professores, o que é demonstrado por meio dos relatos dos participantes. Os resultados obtidos evidenciam a relevância da realização de projetos sobre Educação Ambiental na formação de docentes, pois é neste momento que, de modo mais fecundo, ocorre a sensibilização dos profissionais, futuros educadores. Futuramente, em sua prática pedagógica, contribuirão para a mudança de pensamento e comportamento em busca da sustentabilidade.

PALAVRAS-CHAVE: Educação formal. Ensino aprendizagem. Sustentabilidade.

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