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POSSIBILITIES OF TEACHING ENVIRONMENTAL EDUCATION WITH MUNICIPAL SCHOOL TEACHERS¹

Neides Regina Sehn Hilgert

Voluntary extension scholarship for the Postgraduate course in Natural Resources and Sustainability: ``Universidade Tecnológica Federal do Paraná`` – UTFPR, Santa Helena, Paraná, Brazil
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Maristela Rosso Walker

PhD and Lecturer in the Postgraduate Course in Natural Resources and Sustainability. ``Universidade Tecnológica Federal do Paraná`` – UTFPR, Santa Helena, Paraná, Brazil
Lattes:<http://lattes.cnpq.br/0575598592447642>

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1. This article is an excerpt from part of the master's thesis, carried out at PPGRNS-UTFPR/SH, under the title ENVIRONMENTAL EDUCATION WITH PROFESSIONALS FROM ESCOLA MUNICIPAL ANITA GARIBALDI DO MUNICÍPIO DE SANTA HELENA-PR, available at the link: [educacaoambientalescolamunicipal.pdf\(utfpr.edu.br\)](http://educacaoambientalescolamunicipal.pdf(utfpr.edu.br)).

Abstract: Environmental Education (EE) has been a recurring theme in academic and social debates since the mid-1960s, crossing paradigms until reaching the current context, in which the aim is for educators to have a critical and emancipatory stance with interdisciplinary pedagogical work. We aim to analyze the possibilities of problematizing Critical Environmental Education (EAC) with teachers from the Anita Garibaldi Municipal School in the municipality of Santa Helena. The question is: What are the possibilities of organizing environmental education educational practices based on current legislation? With a qualitative approach, through action research, systematized from a study group in which 10 face-to-face meetings were held, data collection occurred through the planning of lesson plans and generating questions. The results were analyzed through content analysis and we found that the discussion and understanding of EA in an interdisciplinary, holistic and critical way was expanded since 100% of the lesson plans were prepared from an EAC perspective. Keywords: Environmental education. Study group. Lesson Plans.

INTRODUCTION

Environmental issues have been raised by numerous documents since 1960, when concerns about natural resources and environmental preservation became critical due to the rampant use of pesticides, increasing pollution, large-scale deforestation, excessive waste, compromising issues of basic sanitation, health and sustainability of the planet. In this sense, collective actions are essential for the population to become aware of man's actions with nature and other living beings. Environmental Education (EA) plays a prominent role when it comes to preventive work and raising awareness about issues involving the actions of men

and their relationships with the environment and aspects related to social super and infrastructure.

For transformations to occur, **we must** initially reflect on rationality and paradigms that, on the one hand, legitimize economic growth and, on the other hand, deny nature. Thinking about human satisfaction, without depleting sources, implies understanding the relationship with the environment.

In this action, Environmental Education (EA) has an important position as a continuous practice, understanding the connections between the environmental crisis and the existing capitalist civilizational model (LEFF, 2002), which performs an important ideological function. EE can be studied through Macrotrends (LAYRARGUES and LIMA, 2014) that point to certain views, with emphasis on: the conservative view – looking at nature; the pragmatic vision – focused on recycling; and criticism – understanding the interrelationship between living beings and the environment, in social, economic and environmental interactions. Macrotrends highlight a set of actions that aim to change values and attitudes, according to Loureiro (2012), aiming to build a sustainable society and, through educational institutions, propose in a unique way the change in socio-environmental relations, aiming to strengthen the relationships between educational processes and the life of society.

The school space is seen as a place for decision-making, “The core of environmental education is the problematization of reality, values, attitudes and behaviors in dialogic practices” (LOUREIRO, 2012, p. 80). In a sense of a process of mutual learning, through dialogue, reflection and action in the world, getting to know it to transform it and by transforming it, getting to know it.

Under this scope, the importance of school institutions in this process of developing

EA can be seen and, therefore, an EA action was proposed with the general objective of analyzing the possibilities of problematizing Critical Environmental Education with teachers from Escola Municipal Anita Garibaldi from the municipality of Santa Helena. The question was: What are the possibilities of organizing environmental education educational practices based on current legislation with teachers at Escola Municipal Anita Garibaldi? Rethinking at a local, regional and global level the degrading situation in which the environment finds itself, through the EA approach, since the degradation of the environment through human action requires an urgent rethinking of human actions (LEFF, 2002).

MATERIALS AND METHODS

The present work takes the qualitative approach, described by Minayo (2000; et al., 2002), which interprets data collected in a given reality from the perspective of those surveyed and researchers, privileging the understanding of the views and social actions of individuals and population groups in order to capture the reality of the educational experience in question and the meaning of the proposed pedagogical action for the actors involved.

It was implemented, through action research (THIOLLENT, 1986), with 10 study group meetings, weekly, from May to July 2022, providing opportunities for individual and collective reading, directed study, presentation of videos, debates, topics related to EA, preparation of lesson plans (6th to 8th meeting), presentation of lesson plans (9th meeting) prepared by teachers, and closing lecture (10th meeting) with 11 teachers. The project was approved by the Ethics Committee under CAAE: 50360321.0.0000.0165/ Decision, number: 5,124,938.

The meetings based on the texts by

Layrargues and Lima (2014); Gadotti (1999); D'Ambrósio (2011); analysis of BNCC knowledge objects (2017); CNE/CP, decision, number: 14/2012; Federal law: Law, number: 9,795/1999, CNE/CP Resolution, number: 2/2012; Law of Guidelines and Base - LDB of 1996 and the State Law of Paraná: Law number: 17505 - January 11, 2013, establishes the State Environmental Education Policy and the Environmental Education System and adopts other measures.

In this scope, only lesson plans that were prepared in pairs or trios will be analyzed, enabling interdisciplinarity, addressing the EA theme based on the learning objects (content) suggested in the BNCC, which were the data collection instruments.

The 7 (seven) Lesson Plans were prepared based on the following criteria: for Elementary Education based on the following elements: o Model A: 1-Class: 2-Number of classes: 3-Curriculum components: Object of knowledge: Objectives of knowledge: Thematic Units: Methodology: Assessment. And Model B for Early Childhood Education must include: 1-Class: 2-Number of classes: 3-Field of experience: 4- Knowledge and expertise. 5- Learning and development objectives 6- Methodology: 7-Evaluation. guided by the BNCC and the Curriculum of the Association of Municipalities of Western Paraná – AMOP (2019). They are identified as follows: Early Childhood Education Lesson Plan 1 – PAEI1, for Nursery; Early Childhood Education 2 Lesson Plan – PAEI2, for Kindergarten; and Early Childhood Education Lesson Plan for 4 and 5 years old – PAEI3; Elementary School Lesson Plan 1 – PAEF1, for the 1st year; Elementary School Lesson Plan 2 – PAEF2, for the 2nd year; Elementary School Lesson Plan 3 – PAEF3, for the 3rd year; and Elementary School Lesson Plan 5 – PAEF5, for the 5th year

The lesson plans, produced by the participants, were analyzed using Bardin's

(2016) content analysis methodology, which consists of obtaining the information contained in the messages through systematic and objective content description procedures. It is also a method whose essential components, in addition to description, are categorization and interpretation. It follows three stages: 1) Pre-analysis, with floating reading of the materials; 2) Material Exploration: which consists of coding the material, through cutting, aggregation and enumeration, transforming the raw text data; 3) Treatment of results, inference and interpretation: In this phase, "the raw results are treated in a way that makes them meaningful. This analysis was supported by the online application *Voyant Tools*⁴, generating mandalas and word clouds with the most recurrent terms that were later analyzed, with a critical nature, interpreting the data, and recording the concepts that emerged from the word analysis. generator key.

RESULTS AND DISCUSSIONS

During the study group, we promoted readings and debates in order to improve knowledge about EE, with the proposal to prepare and implement lesson plans with the possibility of propositions from interdisciplinary or transdisciplinary perspectives. These propositions were also foreseen in legislation n° 9,795/99, in article 8, paragraph 3: "- the development of instruments and methodologies, aiming at the incorporation of the environmental dimension, in an interdisciplinary way, at different levels and modalities of teaching" (BRAZIL, 1999, p. 01); the decision, number: 14/2012 (BRAZIL, 2012), which advises that EA must be provided while respecting the autonomy of school and academic dynamics, it must be developed as an integrated and interdisciplinary educational practice, continuous and permanent in all phases, stages,

levels and modalities. In fact, the sole paragraph of this same opinion emphasizes that it must occur in undergraduate, postgraduate and extension courses, programs and projects, and in the areas and activities and methodological aspect of EA. The proposals for working with EA are also provided for by Resolution, number: 02/2012 (BRAZIL, 2012), which establishes the National Guidelines on EA. Furthermore, it includes the aforementioned legislation, number: 9,795/99 (BRAZIL), decision, number: 14/2012 (BRAZIL) and Resolution, number: 02/2012 (BRAZIL). Therefore, possibilities for implementing EA in an interdisciplinary manner were analyzed.

The analysis of the lesson plans allows us to affirm that, in the Early Childhood Education lesson plans, the Fields of Knowledge covered are: The self, the other and the us (67%); Body, gestures and movements (67%); Traces, sounds, colors and shapes (67%); Listens to speech, thought and imagination (67%); Spaces, times, quantities and transformations (100%). In Elementary Education, referring to the Curricular Components included in the Lesson Plans, they are: Portuguese Language (100%), History (50%), Geography (75%), Science (25%), Mathematics (75%), Art (50%) and Entrepreneurship and Citizenship (50%). It is clear that in Early Childhood Education the fields of knowledge covered in all stages were: listening, speaking, thinking and imagination; and spaces, times, quantities and transformations. In Elementary School, the curricular components covered in all years were Portuguese Language and Mathematics. We observed that in Early Childhood Education and Elementary Education, both modalities included 100% coverage of the same principles of the curricular components that focus on language and mathematics.

According to PNEA (BRAZIL, 1999), EA is presented as a transversal theme and must be worked on from an interdisciplinary

Participants PAEI and PAEF.	Fields of Experience Or Curricular Component	Objectives
P2, P5 and P10: Nursery- PAEI1	The self, the other and the us; Body, gestures and movements; Traces, sounds, colors and shapes; Listens to speech, thought and imagination; Spaces, times, quantities and transformations.	Differentiate between different types of waste; Understand the waste separation process; Prevent children from diseases (Dengue); Develop the child's logical reasoning, oral and body expression, motor coordination, auditory and visual perception. Listen to songs that deal with Environment, dance and sing with the children.
P4 and P7: Maternal - PAEI2	Me, the other and us; Spaces, times, quantities, relations and transformations; Listening, speaking, thinking and imagining.	Participate in situations of interactions/coexistence and games, acting in a supportive and collaborative manner; Cooperate with peers and adults; Participate in the construction of norms and arrangements for social interaction, organization and use of the institution's spaces; Exercise the ability to live in a group; ... Scribble, paint, draw, model, glue in your own way, giving meaning to your ideas, thoughts and sensations. Participate in situations of interactions/ coexistence and games acting in a supportive and collaborative way. Cooperate with peers and adults. Participate in situations of interactions/coexistence and games, acting in a supportive and collaborative manner. Cooperate with peers and adults. Participate in the construction of norms and arrangements for social interaction, organization and of use of the institution's spaces. Exercise the ability to live in a group. Participate in conversations in large and small groups.
P11: Early Childhood Education for 5 – PAEI3	Spaces, times, quantities, relations and transformations; Traces, sounds, colors and shapes; Body, gesture and movement.	Identify and select sources of information, to answer questions about nature, its phenomena, its conservation; Express yourself freely through drawing, painting, collage, folding and sculpture, creating....
P6: 1st year - PAEF1	Geography, History, Portuguese Language and Mathematics.	Integrate different knowledge in order to encourage the student to adopt critical and reflective stances on environmental problems and, above all, to develop attitudes towards the problem environment and Environmental Education, as well as care for the environment, understanding the social, environmental and economic relationships that exist there, which positively and negatively impact the space in which we are all inserted, the importance of thinking, reflecting on what we are doing where we are located, if I can be better, in a dialectical practice of action- reflection-action, in a critical stance. Discuss and collectively develop rules of coexistence in different spaces (classroom, school etc.); Identify the relationship between your stories and the stories of your family and community; Identify problems in your community reality, research and talk about possible solutions; Describe and distinguish your roles and responsibilities related to family, school and community; Identify tasks/objects of use individual and collective in the environment family that aim to obtain the resources essential to satisfy family needs; Individual and collective actions in the family, school and community environment; ... Read and understand, in collaboration with colleagues and with the help of the teacher, <i>slogans</i> , advertisements and texts from awareness campaigns aimed at children, among other genres in the advertising field, considering the communicative situation and the theme/subject of the text, in order to enable contact with these different texts and the resources inherent to them. Read and understand, in collaboration with colleagues and with the help of the teacher, posters, notices, leaflets, rules and regulations that organize life in the school community, among other types of civic action, considering the communicative situation and the theme/subject of the text, in order to enable contact with these different texts and the resources inherent to them.
P3 and P8: PAEF2 - 2nd year	Portuguese Language, Mathematics, History and Geography.	Select personal objects and documents and those of groups close to them and understand their function, use and meaning; Identify changes and permanence in objects, spaces and ways of acting over time;....

P8 and P9: PAEF3 - 3rd year	Portuguese, Mathematics, Entrepreneurship and Art.	... understand aspects of sociocultural reality significant; Raise awareness of the search for a more balanced life, interaction and respect for nature, adopting healthy habits. Build toys with a focus on eco-sustainability; Present the problem of waste and the advantages of using materials that would be discarded to benefit nature. Experiment with different forms of artistic expression (drawing, painting, collage, comics, folding, sculpture, modeling, installation, video, photography, etc.), making sustainable use of materials, instruments, resources.....
P1 and P8: PAEF5 – 5th year	Entrepreneurship and Citizenship, Sciences, Geography, Art and Portuguese Language.	Help encourage the family to save; Develop conscious consumption; Build collective proposals for conscious consumption and create technological solutions for the appropriate disposal and reuse or recycling of materials consumed at school and/or in everyday life; Developing critical thinking about waste. That all the material used ends up becoming waste; Apply knowledge [...] about the provision of drinking water and the balance of regional (or local) ecosystems; The use of pesticides and ethics in food production: Environmental and human impacts; Know, respect and value the ethnic, regional, ENVIRONMENTAL and cultural differences that characterize the territory of Paraná, relating them to migratory movements. Analyze the transformations of landscapes in cities by comparing sequences.....

Table 01- Lesson Plan Analysis

Source: The author, 2023.

Class plan	It presents the possibility of addressing Critical Environmental Education by BNCC	Knowledge Objects
PAEI1	(x) Yes () Not () In part	Standards and combinations of social interaction. Body and movement, cuidados com a saúde.... Oral language in your diverse social functions and uses. Strategies for resolving problem situations.
PAEI2	(x) Yes () Not () In part	Vocabulary... Strategies for resolving problem situations. Confidence and positive self-image. Socializing and social interaction. Living standards. Preservation of the environment. Selective garbage collection. Time sequence.
PAEI4 and 5	(x) Yes () Not () In part	Environment: Respect nature..
PAEF1	(x) Yes () Not () In part	Social situations in different places. The different forms of family and community organization: personal bonds and friendship relationships... Different forms of production in the family structure: types of work, social roles, power relations: father/mother, man/woman... Listen carefully. Features of spontaneous conversation... Purpose of the text/social function. Purpose of the text. Reading comprehension. Expansion and adaptation of vocabulary to the genre. Adequacy to the need for established interaction (Who? For whom? What? When? Where? - production context. Adequacy to the theme. Adaptation to the format/structure of the genre... Environmental education.
PAEF2	(x) Yes () Not () In part	Production and structure of oral text...clarity in the presentation of ideas Reading strategy; pre-reading ways of recording and narrating stories (material and immaterial memory milestones... Changes and permanence.
PAEF3	(x) Yes () Not () In part	Understanding: main and secondary ideas; Attribute meanings that go beyond the text read; Text planning; Adequacy to the theme; Orthography; Score.. Data; Graphics. - Ecological awareness. Materialities: support - paper, cardboard, recyclable paper, among others; collage – mixed technique...
PAEF5	(x) Yes () Not () In part	Conscious Consumption. Water and preservation. Data, Tables and Graphs. Creation Processes.

Table 02 - Lesson plans: objects of knowledge (content).

Source: The author, 2023.

Fazenda (2011) seeks to overcome the fragmented view of knowledge, and must maintain a dialogical pedagogical relationship, not fragmenting, but rather, completing each other, based on an attitude of exchange between teachers and students with the interaction of disciplines, their concepts, methodologies and organization of teaching. In other words: [...] Interdisciplinarity will be possible through progressive participation in team work [...] (FAZENDA, 2011, p. 94).

In the PAEI1 proposition, it is observed that we sought to integrate knowledge in an interdisciplinary way, starting from the student's reality.

The actions proposed in PAEF1, PAEI2, PAEF3 and PAEF5, 100% covered situations that depart from the reality and knowledge of the students, proposing practical actions and aiming to analyze and intervene in the environment in which they live. These are actions that integrate knowledge of reality (theory and practice) and analyze it critically, aiming to "raise awareness for transformation" (BRANDÃO, 2006, p. 72), for EA, addressing the issue of deforestation throughout history in a holistic approach Leff (2006), in a liberating education, in a Pedagogy of Hope by Freire (1997), proposing interdisciplinarity in actions. "It is a collective, co-participated work to build knowledge of the local reality: the immediate place where people live and will become literate" (BRANDÃO, 2006, p. 11).

Regarding the PAEI3 lesson plan, it is noted that the participant aimed to promote an understanding of the environmental factor from the perspective of endangered animals, air pollution and garbage, based on the reality in which they live, the students' prior knowledge. It seeks to instigate the student's knowledge, as the "readings of reality" must be experienced in the midst of as close a participation as possible in the daily lives of

the people's students" (BRANDÃO, 2005, p. 35).

Thus, according to Gadotti (1999), interdisciplinarity presupposes an attitude and method that implies:

1st content integration; 2nd move from a fragmentary conception to a unitary conception of knowledge; 3rd overcome the dichotomy between teaching and research, considering study and research, based on the contribution of the different sciences; 4th teaching-learning centered on a vision that we learn throughout our lives (permanent education). (GADOTTI, 1999, p. 2).

"Transdisciplinarity leads the individual to become aware of the essentiality of the other and their insertion in the social, natural and planetary, and cosmic reality" (D'AMBROSIO, 2011, p. 10), proposing immersion in the space in which they are inserted, analyzing and proposing intervention to improve the whole.

The ideal is a learning proposal that integrates the school community "forming learning communities, achieving greater student involvement and often transforming the reality of their school" (BRANDÃO, 2006, p. 20), beyond the classroom and of the school, aiming for the homes of the entire school community.

In a view of the whole, analyzing the space in which they are inserted, with reflection and proposing a change of attitude, "critical environmental education argues that reflection is necessary so that there is a paradigm transformation, in which the environment becomes a place of emancipation of subjects and where there is the deconstruction of socio-environmental realities" (BRANDÃO, 2006, p. 52).

Reigota (2009, p. 36) conceptualizes the environment as "[...] a determined and/or perceived place where natural and social aspects are in a dynamic relationship and in constant interaction. These relationships

entail processes of cultural and technological creation and historical and political processes of transformation of nature and society". In this space, where life happens in interaction, in actions, the importance of practicing EA is seen, so that human beings realize that their action reflects this environment. Reigota (1995, 2017), the PCNs (1997) and Sauvé (2005) present the space that human beings occupy and their relationships as the environment.

The objects of knowledge (content) proposed by the participants in their lesson plans are observed. In Table 02, the words that refer to social relationships and integrate interdisciplinarity are highlighted in Table 02 in blue: social interaction, health care, various functions social and social interaction, norms of coexistence, preservation of the environment, selective waste collection, environment: respect for nature, different forms of production in the family structure: types of work, social roles, power relations, spontaneous conversation, expansion and adequacy of vocabulary to the genre, adequacy to the need for established interaction: Who? For whom? What? When? Where? Environmental Education, ecological changes, changes and permanence, conscious consumption, water and preservation, data, tables and graphs, creation processes. The proposed knowledge objects seek to contextualize EA.

These results demonstrate that EA can be approached in an interdisciplinary way from the BNCC, confirming our initial hypothesis, from a critical perspective. Of the 7 PAs created, 100% managed to translate content related to EA into classroom practice in an interdisciplinary way. This data collected from authors who were consulted during this research differs, who state that it is not possible to approach EA from the BNCC, such as Behrend, Cousin and Galiazzi (2018).

CONCLUSIONS

The results demonstrated that the research participants were not aware of the conservative, pragmatic and critical macro trends, reaffirming the importance of group studies, linking universities and education networks, in offering extension models to advance the knowledge disseminated in school contexts. Therefore, be sowers of educational practices that provide opportunities and provide emancipatory education, in the quest to increase social, economic and environmental interventions, in the space in which I operate.

When analyzing the possibilities of problematizing Critical Environmental Education with teachers from Escola Municipal Anita Garibaldi in the municipality of Santa Helena, we can highlight that this objective was achieved, as critical teaching practices and interdisciplinary methodology were developed by teachers based on lesson plans organized based on the studies designed in the study group.

By theoretically contextualizing the educational documents and legislation that guide Brazilian Environmental Education, during the implementation of the study group, there was the dissemination of knowledge about the legislation, which emphasizes the mandatory implementation of the theme at all levels and modalities of teaching, of way, inter, trans and multidisciplinary. The study group provided the opportunity to expand information about the laws in accordance with the statement of several participants who stated that they did not have knowledge of EA legislation before the study developed in the implementation of the study group of this research. Knowledge of the laws makes it possible to envision new training opportunities, as well as opening up the possibility of implementing the theme. We consider it important to implement a

partnership between education networks, universities and municipal networks, in order to expand knowledge, from a holistic perspective of sustainability for the three pillars: social, economic and environmental.

By collecting data and objects of knowledge aimed at developing the EAC theme with elementary school teachers at Escola Municipal Anita Garibaldi, in the municipality of Santa Helena/PR, we were able to see that we have advanced in the concepts of EAC, environment and sustainability in the institution in that the research was developed. There is still a lot that can be idealized in the other institutions of the network, new interventions to be made to disseminate EA legislation, concepts of conservative, pragmatic and critical EA, to awaken new possibilities for implementing campaigns in education networks, starting from reality of the environment in which they are located. This way, it will be possible to advance knowledge and promote dialectical action.

In view of the above, it is noteworthy that the educational documents and legislation that guide Brazilian Environmental Education were theoretically contextualized, disseminating them and highlighting ways of implementation both in the dissertation, as well as in the implementation of the study group, which disseminated the legislation and support legal from EA.

During the implementation of the study group, participants developed lesson plans that helped to relate theory and practice studied through teacher proposals, the implementation of EA in pedagogical practice in the school context. It was observed, from the lesson plans presented, that the concept of interdisciplinarity was understood when 100% of the participants prepared the plans from this perspective. It is worth noting that the time allocated to research at the master's level does not allow us to expand discussions

on this topic, as well as accurately assess the implementation of the plans drawn up. We have preliminary results such as those presented by the participants that lead us to infer the possibility of carrying out interdisciplinary work, as well as the need to continue research focusing on these issues.

At Anita Garibaldi Municipal School, selective bins for organic waste and recyclable materials were made available in all classrooms, and students understand the importance of these and experience in practice the selectivity of dry and wet waste. Also, the use of a single enameled mug was adopted for each professional who works there, as there were glass cups that broke and needed to be replaced. It's small actions that make a big difference.

The idealized research produced actions and work far beyond what was intended. The interventions present positive results, as participants advanced in the concepts of the environment, environmental education and sustainability. The implementation of the lesson plans and the actions that have been emerging went beyond what was planned, drawing attention to simple everyday situations in society, which require an EA perspective, as they impact the three pillars of sustainability: social, environmental and economic.

The implementation of the research had an effect beyond the school walls, reflecting on the school community and seeking to show society the importance of EE, an education for respect for the environment, for all living beings, as actions triggered by human beings have an impact locally, but reflect across the entire planet. This holistic view, that there is no such thing as "I'm going to throw the trash out there", there is no outside, as everything is inside planet Earth and all actions need to be thought out so that we can leave a habitable planet for future generations, contemplating

the Objectives of Sustainable Development - SDGs (2015).

It was pedagogically important to disseminate EA legislation among the study group participants, and they discovered that it is the right of education teachers to receive continued training in this area at all levels and modalities, and questioned why this did not happen, stating that they would charge actions regarding the matter.

Education does not change the world, but it does change people, who change the way they think, the way they act and this reflects on the planet. On this planet that needs to be respected, as the participants said, the importance of action-reflection-action, that is, of dialectics, for changing behavior, if I realized that I am wrong, I must have the humility to change my actions.

SUPPLEMENTAL MATERIAL

Regarding the development of this article, there is supplementary material in the repository of the - UTFPR, Santa Helena Campus, available at the link: <https://repositorio.utfpr.edu.br/jspui/handle/1/31228>.

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CONFLICT OF INTEREST

There is no conflict of interest.

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