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Curriculum environmentalization in a biological sciences bachelor degree course: professors' experiences from the ecophenomenological perspective[1]

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ABSTRACT

The objective of the present sudy is to investigate curricular environmentalization from the perspective of experiences lived by professors of a Biological Sciences Bachelor Degree course. The investigation was based on ecophenomenological approaches and carried out at Federal University of Paraná, mainly with the Biological Sciences Bachelor Degree course. After analyzing the Curriculum Pedagogical Project and the syllabi of the course's subjects, it was possible pointing out that 21 subjects were consistent with curricular environmentalization. Six professors holding these discipline's chairs were invited to attend an interview based on walking ethnography, and it led to six narratives, whose analysis opened room for three categories: i) Daily attitude; ii) Memories; and iii) Personal and professional relationships. Discussions highlighted the relevance of addressing environmental issues in Higher Education and how professors have the choice to address them in such a way to encourage reflections and experiences that go beyond anthropocentrism.

KEYWORDS: Higher Education. More-than-human world. Ecophenomenology. Environmental education.

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A ambientalização curricular em um curso de licenciatura em ciências biológicas: experiências docentes sob a perspectiva ecofenomenológica

RESUMO

O objetivo deste trabalho foi investigar a ambientalização curricular sob o olhar das experiências vivenciadas por professores de um curso de Licenciatura em Ciências Biológicas. A investigação, pautada em referenciais ecofenomenológicos, foi desenvolvida na Universidade Federal do Paraná com o curso de Licenciatura em Ciências Biológicas. Após a análise do Projeto Pedagógico Curricular e das ementas das disciplinas do curso, percebeu-se que 21 disciplinas eram condizentes com a ambientalização curricular. Seis docentes responsáveis pelas disciplinas foram convidados a participar de uma entrevista por meio de um *walking ethnography*, que resultaram em seis narrativas. Por meio da análise das seis narrativas, emergiram três categorias intituladas de: i) Postura cotidiana; ii) Memórias; e iii) Relação pessoal e profissional. As discussões demonstram a importância de abordar as temáticas ambientais na Educação Superior de forma que propiciem reflexões e vivências para além do antropocentrismo.

PALAVRAS-CHAVE: Educação Superior. Mundo mais-que-humano. Ecofenomenologia. Educação Ambiental.

Ambientalización curricular en una carrera de grado en ciencias biológicas: experiencias docentes desde la perspectiva ecofenomenológica

RESUMEN

El objetivo de este trabajo fue investigar la ambientalización curricular a partir de las experiencias vividas por docentes de un curso de Licenciatura en Ciencias Biológicas. La investigación, basada en referentes ecofenomenológicos, se desarrolló en la Universidad Federal de Paraná con el curso de Licenciatura en Ciencias Biológicas. Después de analizar el Proyecto Pedagógico Curricular y el programa de las asignaturas del curso, se percibió que 21 asignaturas estaban en consonancia con la ambientalización curricular. Seis profesores

responsables de las disciplinas fueron invitados a participar de una entrevista a través de una etnografía ambulante, que resultó en seis relatos. A través del análisis de las seis narrativas surgieron tres categorías: i) Actitud cotidiana; ii) Memorias; y iii) Relación personal y profesional. Las discusiones demuestran la importancia de abordar los problemas ambientales en la Educación Superior y cuánto depende del docente abordar de una manera que propicie reflexiones y experiencias más allá del antropocentrismo.

PALABRAS CLAVE: Educación Superior. Mundo más-que-humano. Ecofenomenología. Educación ambiental.

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Introduction

The term curricular environmentalization rose from the joint effort of researchers from different countries who formed the *Red de Ambientalización Curricular de los Estudios Superiores – Red ACES* (Guerra; Figueiredo, 2014). This network was created as common project of the European Union Alpha Program, also known as *Programa de Ambientalización Curricular de los Estudios Superiores: Diseño de intervenciones y análisis del processo* (Mota; Kitzmann, 2020).

This program comprised 11 universities, five in Europe and six in Latin America; three of the Latin ones were Brazilian, namely: Paulista State University (UNESP), State University of Campinas (UNICAMP) and Federal University of São Carlos (UFSCar). The aim of the program was to elaborate analysis methodologies to assess the curricular environmentalization degree in Higher Education Institutions in Latin America and Europe (Guerra; Figueiredo, 2014) by understanding it as a

> [...] continuous cultural production process focused on forming professionals committed to permanent search for the best relationships possible [to be set] with society and nature, in order

> to meet justice, solidarity and equity values by applying universally acknowledged ethical principles and respect for diversity (Junyent; Geli; Arbat, 2003, p. 21).

The researchers had in mind 10 fundamental features to identify whether a bachelor degree course is environmentalized, and they subsidized the curricular environmentalization degree diagnosis: 1. Complexity; 2. Disciplinary order – flexibility and permeability; 3. Context; 4. Taking the individual into account in knowledge construction; 5. Considering individuals' cognitive aspect and actions; 6. Coherence among theory, practice and reconstruction; 7. Prospective profile of alternative scenarios; 8. Methodological adjustment; 9. Creating reflection and democratic participation places; 10. Commitment to change relationships between society and nature (Junyent; Geli; Arbat, 2003).

Waszak and Santos (2018) emphasize lack of 'recipe" applicable to curricular environmentalization, but there is a process to deepen reflections about humans' relationships with the environment. The study by Thomaz and Camargo (2007) highlights that environmentalization is a slow process built from the education reality whose teachers, students and community are committed to environmental culture in order to likely change Higher Education discipline matrices.

According to Pessoa, Mota and Samá (2018), sensitization is essential to humans' cultural change. As soon as humans become sensitive of socioenvironmental causes they will be able to think about possible actions to better understand the complexity of life and to seek likely senses of belonging to places that provide the reason for 'being' in the world.

The book '*Visões e experiências Ibero-Americanas de sustentabilidade nas universidades"* is the outcome of the 3rd International Seminar on Sustainability in the University. It makes available several studies that provide reasoning and actions linked to curricular environmentalization developed in universities in Brazil, Spain, Argentina, Chile and Colombia. This book is a unique input to the literature on the higher education

sustainability topic, since it introduces a whole set of authors from countries and institutions that have addressed problems and challenges associated with including environmental topics in universities (Leme *et al*., 2011).

The book "*Educação para ambientalização curricular: diálogos necessários"* is another example of literature that takes one closer to curricular environmentalization (Figueiredo *et al.,* 2017). It comprises the studies by eight Higher Education Institutions from Santa Catarina State, Brazil, and from other Latin American countries.

Both books address higher education curricular environmentalization as the act of including and approaching socioenvironmental and sustainability issues at all levels in university sectors and activities (Marcomin; Neiman, 2016). Accordingly, rethinking about multi- and interdisciplinary activities focused on processes resulting from institutional policies is essential requisite to guide and reinforce integrating relationships between society and the environment (Oliveira, 2017).

Oftentimes, it is possible observing the need of taking effective change-oriented environmental pedagogical actions. Several texts in these books refer to cross-sectional approaches that open reflexive and democratic room in universities where knowledge and collaboration are shared, practiced and encouraged. This process can give birth to values linked to socioenvironmental sustainability perspectives and take away centralized procedures substantiated by authoritarian and competitive attitudes. Thus, it is important moving forwards in its integration and institutionalization to ensure that universities embody the role of political education to socially and culturally change the environment (Oliveira, 2017).

Therefore, the relevance of reasoning about bachelor degrees in higher education institutions becomes clear, since these institutions qualify future professionals. Therefore, they hold the responsibility for thinking from other perspectives about being 'on, within and open' to the world. Accordingly, the following research question came up: what are Biological Sciences Bachelor Degree courses professors' concepts of curricular environmentalization?

Ecophenomenology

When it comes to environmental education, our experiences express our continuous sensitive, sensory and effective relationships with the environment (Payne *et al.,* 2018). The lived experiences come up as "great potential to influence human formation, since the playful and creative contact with the environment can help building an ethics supported by sustainability and respect for all forms of live" (Gomes; Silva; Iared, 2020, p. 248). In this case, phenomenology must focus on understanding experiences based on non-dissociation approach between the individual and the world (Merleau-Ponty, 1999).

Merleau-Ponty (1971) addresses the sense of perceiving a world crossed by experiences lived in it by the individual; thus, any lived experience is firstly experienced and interpreted by the materialized body. In one of his unfinished studies, Merleau-Ponty (1971) develops one of his main concepts to understand what has been herein addressed, so far, the so-called materialized body in the world where "my body is made of the same flesh as the world, (...) both overlap each other" (Merleau-Ponty, 1971, p. 225). Yet, according to him, perceptions come up from the body's actions, it is movement, because before the science of the body "the experiences of my denim flesh, of my perception, taught me that perception is not born anywhere else, but emerges in the recesses of a body" (Merleau-Ponty, 1971, p. 21).

Timothy Ingold emerged with a new viewpoint to make one asks about human beings inside and with the world, since he is one of the most contemporary researchers aimed at understanding how experiences influence the way humans understand the world (Gomes; Silva; Iared, 2020). Merleau-Ponty gets closer to the thoughts by Ingold when he seeks the roots of his own philosophical thinking. According to Ingold, knowledge production can be separated from individuals' engagement in the world and in creative actions (Steil; Carvalho, 2012). Hence, Ingold's perspectives aim

at putting aside the body, mind and landscape concepts, known as identity continents, to become subjects holding life, with defined limits, although permeable and porous.

The life flow and lines addressed by Ignold take us straight to the ways humans learn in, with and for the world, and it was conceptualized by him as *attention education*. Similarly, Borges (2014) suggests that learning comes from a mesh of entangled practices within a more-than-human world full of meanings set by an attention education. According to Ingold (2010, p.7), "first of all, our knowledge consists in skills, and every human being is a core of perceptions and agency in the field of practice". One should go beyond the existing dichotomy between innate skills and acquired competences in order to understand knowledge or how it is acquired throughout life, based on properties deriving from the dynamic system (Ingold, 2010). It means that experiences lived by humans and non-humans are crossed by the environments' active forces and it creates their own forms of life. Thus, "attention education turns out fundamental to identify traces, tracks and lines left by these forms of life in the environment" (Carvalho; Steil, 2013, p. 65).

Understanding knowledge as it was approached by Ignold does not mean that it was built through transmission or accumulated representations, because perceptions come out from "direct, practical and sensitive engagement in things around us" (Ingold, 2016, p. 407). At this point, Ingold (2010) stresses attention education as learning process whose "pointing-out" something to someone means turning it real for the person getting it. Yet, it means a fine tuning of the receptive system, including the brain and receptor organs in combination to neural and muscle connections to observe specific aspects of the environment.

The present study meets the theoretical fundamentals of ecophenomenology (Brown; Toadvine, 2003). According to Gomes and Iared (2021), it is the extension of phenomenology itself, which interacts with humans' relationships with nature, besides joining environmental thinking

and the phenomenology of nature. Similarly, Sato (2016) approaches ecophenomenology as physiological orientation extrapolating human completeness, which covers other forms of life and has been appropriated by the environmental education field.

Ingold writers were essential to the development of the current study. They were herein used to advocate for an environmental education that renews humans' relationship with the more-than-human world, rather than just defending the curricular environmentalization in bachelor degree courses.

The taken pathways

The present study followed the qualitative experimental design and was carried out in a Biological Sciences Bachelor Degree course of a public university in Western Paraná State. The amendments of the Curricular Pedagogical Project were analyzed at the first stage of the study in order to identify the disciplines prone to be classified as potentially boosting discussions about the environment topic, also known as PPC. In total, 10 features formulated by Junyent; Geli and Arbat (2003) were taken as selection criteria to analyze the amendments. However, based on the herein adopted theoretical references, it was possible suggesting an 11th feature to reason about the more-than-human world from a horizontal perspective in compliance with the curricular environmentalization. The 11th amendment, just as its criteria, can be observed in Chart 1.

Chart 1: 11th feature for an environmentalized discipline matrix

More-than-human world perspective
11.1 Horizontally-oriented relationship between men and the more-than-human world.
11.2 Reasons on less anthropocentric perspectives.
11.3 Provides theoretical-practical support to the more-than-human world.
11.4 Opens room for dialogue and for new experiences to be lived

Source: Elaborated by the author (2023).

The second study stage was featured by contact with the Biological Sciences Bachelor Degree course's coordinator, so she could help pointing out the professors in charge of each discipline. Six professors holding these chairs were invited to join an interview guided by eight questions aimed at setting a dialogue about their experiences, motivations and perceptions about the environmental topic from a less anthropocentric perspective. The interviews were previously scheduled by e-mail and audio recorded in a Smartphone; they were subsequently transcribed by the present researchers. The interview was carried out through *walking ethnography* in a pathway inside the university. The route was previously planned, so that participants could choose the paths to be taken.

The *walking ethnography* can be conceptualized as body practice, because composing the materiality of more-than-human experiences is one of the research tasks related to environmental education (Iared; Oliveira, 2017). One narrative rose from each transcription, and they referred to peculiar experiences lived by each participant. Individuals' immersion to the experimental level is one of the factors featuring the phenomenological research.

Alves, Buffon and Neves' (2021) methodology, which is supported by principles of phenomenology, was herein used to organize the data analysis. This analysis type holds three moments that help finding the assessed phenomenon.

At first, one finds the formation of units of sense based on the individual analysis of each experience shared by research collaborators. This first moment composed the analysis of the six narratives, which were herein partitioned into units of sense. After having all the units of sense, of each narrative, it was possible jumping out to the second moment (Alves; Buffon; Neves, 2021).

The second moment took place as the research disclosed its understanding of each unit of sense and turned them into utterances called units of meaning, which crossed from the researchers' naïve language to a

language closer to the theoretical reference of the situated phenomenon (Alves; Buffon; Neves, 2021).

The third moment was called 'categorization" and it takes place based on the argument of units of meaning surrounding a central core. The research makes a move at the stage that takes units of meanings close to broader categories. Generalizing participants' individual ideas does not mean generalizing ideas about the assessed phenomenon, but just getting closer to the enlightened meaning (Alves; Buffon; Neves, 2021).

Participants' narratives expressed in letters were replaced by narratives during the categorization process, and Valquiria's narrative was represented by letter "A"; Daniele's, by letter "B"; Marilia's, by letter "C", Juliano's, by letter "D"; José's, by letter "E", and Fernanda's, by letter "F". As the unit of sense was standing out, it would join the letter representing the participant and the growing number representing the order found in the interview, like "A1", "A2", and so on.

Under the mosaic's light

In total, five of the six participants were associated professors and one was a substitute professor; two of them were men and four were women. Chart 2 shows participants' profile.

CHART 2: Research participants' profile

Participant	Time as professor	Time teaching at UFPR	Time teaching in the assessed course	Code of units of sense
Valquíria	15 year	13 year	13 year	A1~A11
Danielle	15 years	8 years	8 years	B1~B7
Marilia	8 years	2 years	2 years	C1~C10
Juliano	16 years	13 years	13 years	D1~D6
José	30 years	30 years	13 years	E1~E7
Fernanda	10 years	8 years	2 years	F1~F10

Source: Elaborated by the authors (2022).

The meshes formed over the interviews allowed disclosing the narratives built by the present authors. The narratives enabled expressing the effectiveness and other elements of nature's aesthetic experience. Elaborating the narratives becomes an instrument to give voice to affection, flow and, consequently, to the means through which life and its stories unfold (Payne, 2013).

Three categories emerged from the *walking ethnography* analysis and from professors' narratives, and they were called i) Daily attitude; ii) Memories and iii) Personal and professional relationship.

Daily attitude

Several professors addressed contexts related to aesthetic, ethical and political values concerning environmental protection and conservation during the walks.

The excerpts transcribed below shine light on deep concerns with the environment. According to Marin (2007, p.118), "the sense of ethics rising from intentional experiences with the world through aesthetics experiences is what paves the way to be taken in environmental education". The more we live intentionally, our relationship with the world becomes visceral: *So, all actions one takes will somehow damage the environment. Ruling it out is impossible, but I must minimize its impact on those coming after me, so, these are actions I can take on a daily basis, let's put it this way, minimizing the impact I will leave behind for those coming after me. (b5) […] the professor mentioned that contexts addressed by environmental education are closely related to ethics, because, oftentimes, we forget that even our own attitudes did not affect our generation, but that they can affect future generations. From this concept, she says that thinking on the right of animals and plants means acting ethically in the world. (F3)*

Reflecting about relationships in, with and for nature, from the education perspective, is the way to reconfigure teaching models experienced nowadays. Jickling (2017) states that most teaching centers did

not develop opportunities for individuals to experience the world in such a fashion to promote paradigm changes. Understanding human interaction in the world, based on ecophenomenological elements, can shine light on the spaces and strategies matching the environmental phenomena approach.

Based on their speeches, any professor initially seemed worried about approaching environmental contents in the classroom, since they did not deeply work environmental topics during their initial, continuous and post-graduate training. Yet, whenever they had such training, the learned practices were not related to "sympathetic bricolage"[1] (Charlot, 2020, p. 10): *At some point during the interview, she mentioned that for a long time she did not have a nice view of environmental education. (A4) She mentioned that during her career as professor, environmental education was limited to turning recyclable waste into toys. (F1)*

Gadamer (1999) criticizes the idea that the scientific method experience is the only way to access truth in his book "*Verdade e Método*". According to him, there are other ways of learning with the world. Just as an example, Gadamer makes an aesthetical comparison supported by a game, because in the game, just as subjects' experiences, the individual is not controlling the phenomenon, but is part of it.

Charlot (2020) made the historical rescue of pedagogies used in education and it allowed observing that the traditional, reductionist and unilateral teaching marks how environmental topics are taught and worked, as expressed in the speech by one of the professors. However, although the complexity of environmental topics is taught in a reductionist way, several professors seemed to act towards environmental education in the classroom: *In her classes, she felt deeply responsible for getting to sensitize her students and for making them reason about the possibility of being sustainable in the labor market. She sought to always think about the ways to guide her practices in a more economic and lesser polluting way. (B4) Professor Fernanda recalled that there are disciplines encouraging reflections about anthropocentrism. Fernanda told us that her classes follow the Cartesian*

bias, even though, she tries to show her students that there are many other lenses that can be used for one to look to the world. (F9)

Accordingly, it is worth highlighting that some participants stated that environmental education still presents gaps to be fulfilled. Charlot (2020) advocates for a contemporary pedagogy capable of boosting environmental education as anthropological Project emerging from places beyond daily bricolage: *Based on an education context, Marilia told us that she felt a gap between scientific knowledge in higher education and students' reality. (C7) When we were heading towards the end of our interview, the professor told us that the Higher Education issue, nowadays, is fragmentation, and it stops us from seeing the big picture; thus, each discipline starts in one point and ends in another, so that other partitions can be opened and the process starts all over. She stated that professors should make students think outside the box, so that they can build bridges between the approached contents. (E6)*

In order to overcome some of these environmental education gaps, Carvalho and Mhule (2016) suggested an education outside the box, based on Ingold's (2010) attention education. In this case, the learning process is linked to an oriented rediscovery experienced through the will of making something present in somebody, so that this person learns straight from looking, hearing or feeling (Ingold, 2010). Accordingly, Clough and Halley (2007) give affection, emotion and aesthetic experiences a new direction and head them towards the cores of educational processes. Thus, creating a felt and impacting education experience can be the very basis of a truly changing learning process.

The sensible and aesthetical experience argument in the study by Payne *et al.* (2018), who see it as the transcendence from the rational and sudden sight, helps us understanding the meaning of being human in, with and for the world. Yet, aesthetics enables having imaginative, creative and affective experiences due to attitudes observed in our society. Therefore, some speeches point out situations that break with daily education practices and that do not use to experience the body's immersion in the world: *The*

professor also tells that it was through his career that he enhanced his concepts of how humans set their relationships with the world, as well as the curiosity that drove him to understand ways to make humans feel curious to get to know how such relationship works. (E2) However, although in the beginning she practiced a sort of out-of-context environmental education, she also said that she knows that it was not enough to make students think about the environment. (F2)

Historically, education institutions have emphasized the cognitive dimension of the learning process and ignored its dimension of values. This finding does not mean that a given institution does not help or cannot help the act of experiencing the environment. However, this process requires planning based on clear intention to promote aesthetical values. The proposition of 'turning' movements, such as the affective turn and the anthological turning, must have some place in teachers' training discipline matrices, since, according to Steil and Carvalho (2014, p. 163), "[…] the way we inhabit the planet is not separate from the way we know it".

The interview excerpts below show professors' criticism to and concern with consumption, which meets the aesthetics prevailing in our contemporary world. Based on Passos and Sato (2002), the capitalist culture has been manipulating the culture and artistic deeds to impose an aesthetics substantiated by consumption: *Throughout the interview, she pointed out situations that evidenced her concern with the world and with her students. Many times she had a respectful attitude towards water on the planet, industrial pollution, consumption and preservation. (B1) She mentioned that we need food and water, and that the problem does not lie on surviving over it, but on living on surpluses. Intense heat and rain shortage we are witnessing nowadays due to excessive use, she would say, and the excesses of present times will affect future generations. (F7)*

Aesthetics, ethics and politics emerge as ways to environmentalize pedagogical practices in order to reach a visceral, corporal and emotional relationship between students and the world. Whenever the flow of events

involving human beings' in, with and for the world is brought to the teaching environment, the world creates intervention, questioning and answering possibilities. These are the situations where daily searches take place, and they build new pathways that are actually crossed, and Ingold (2016) called 'correspondence'. According to him, correspondence means "carefully living with others" (Ingold, 2016, p. 408). Humans develop their knowledge and learning within this correspondence relationship, and it goes against the dominating pedagogical model, according to which, efficacy is observed through the reproduction of preexisting mental contents (Ingold, 2016).

Aesthetics, ethics and politics open room for speeches rising from respect to the environment. It is essential discussing and deepening in these matters to create the conditions to reason about and interpret the stigmas created in society. Creating an ethics focused on human being as body in the world must take this individual in its complexity and wholeness to reinforce the principles of respect for different corporeity types.

Memories

Professors' speeches point towards conviviality in nature and to timeless affection bonds in this category, i.e., how experiences in nature during childhood or over life have impact on our very existence. Many professors reported to have taken the environmental field closer to childhood experiences or to experiences lived at initial professional training: *he highlighted that it was along with workmates, and in the experience he had in a school that extrapolated the traditional teaching, that he started observing environmental education in different ways. (A6) First, she told us that her closest proximity to nature was inherited from her parents, she lived in a cottage in her childhood and it made her closer to animals and plants. (C2)*

Learning takes place at real time, in other words, it comes up without any dichotomy among knowledge fields, but from correspondence to life's

historical process (Ingold, 2010). Ingold (2017) argues that while we learn with other things we also learn with ourselves.

The previous excerpts showed that experiences turned real through teachers and family members' promoted values that have formed these individuals and made them see and act in the world. The reference to childhood is clear in the excerpts above. Adults' perceptions are full of emotions deriving from childhood experiences. Merleau-Ponty (1999, p. 24) states that "[...] the child understands much more than it is capable to express, it answers beyond it could define".

Accordingly, several reports addressed nature contemplation. As for Tristão (2005), environmental education can bring back sensations so individual and collective subjectivities can create the sense of belonging to nature and of intimate contact with it. Thus, whatever was done for leisure and nature contemplation purpose leads to different viewpoints: biodiversity conservation, scientific investigation or even recreation in the environment, as observed in the selected excerpts: *During the walk, professor Juliano reported that his relationship with the world has a contemplative bias and that many times he had feelings, such as easiness and well-being, for nature. Juliano told us that he liked to observe the frost in the winter and to listen to the waterfalls. (D4) Our walk was slow and easy. José walked with one hand holding the other on his back and his gaze was oriented to the trees' canopy, as if he was observing or looking for something. (E1)*

These reports cover nature-valuing in the sense of safeguarding its value, as way of affective belonging. Thus, there is a set of values, such as use, objectivation of things and duality between humans and nature, which are opposite to environment rationalization, namely: ecological balance, solidarity, respect and the non-separation of all spheres of life. According to Steil and Carvalho (2014, p. 164), "[...] it is possible separating the mind from the body, culture from nature, knowledge from experience. In order to be sensitized, from the ecological perspective, it is necessary being immersed in the matter and in the world through continuous engagement in the

environment": *At some point of the walk I asked how was her relationship with the more-than-human world and, by looking suspicious, she said something that made me recall Tim Ingold's correspondence process within, in, and for the world, or even the ethical and political contexts of preservation. She said that everything we do somehow affects other things so we must ensure that we are having the least impact possible. (B6)*

In their own worlds, participants rescue their life trajectories when they see themselves within an attitude of care, respect and conviviality with nature. Witnessing the more-than-human world by experiencing that time and place means emerging from the subject-object association in order to understand that humans' materiality and that of the more-than-human world are joint opportunities (Iared, 2019). Participants seemed worried with the objectified sight of our contemporary society: *At this point, she told me that she saw the more-than-human world almost like an object, because it was something or some place she would only visit to enjoy, like going to the beach. Fernanda always treated pets like humans, and she said she feels touched when she thinks in the piglets that will be eaten, but when she is in the supermarket buying meat, she says she does not think on the context the animals passed through in order to get to the shelves. (F6)*

Learning does not happen through the collection of transmitted ideas, but through attention education, and it makes one understand knowledge as "ability to perceive and to judge, which develops through straight, practical and sensible engagement in things around the individual" (Ingold, 2016, p. 407). With respect to the education field, memories we create throughout our trajectory decentralize human beings from their own educational process, since education experiences take place through belonging relationships between humans and the more-than-human world (Ingold, 2012). Therefore, this category addresses the idea of memory as the reflexive act of feeling like being part of the world by acknowledging that memories vivify the experiences and leadership of nature.

Personal and professional relationship

The last category emerged from participants' lack of association between personal and professional life. Oftentimes, personal experiences were brought as example for a professional life: *She mentioned no theoretical deepening in environmental education, but we try to get it through personal life examples, this is the way to make students reason from different contexts and complexity. (A11) As for the classroom context, this professor uses personal and professional life examples. She also contextualized that teaching requires thinking in such a way that goes beyond transmitting something that students are already aware of, because just randomly teaching may not give students the tools they need. (B7)*

It is important highlighting that knowledge on this particular topic emerged from biases that extrapolate scientific knowledge. From the perspective of critiques to environmental education, there are other ways of learning with the world and they are also valued; therefore, concepts related to culture, religion, arts and ethnicities rise from this very dialogue. Cuts in professors' narratives shine light on how knowledge can be transmitted through experiences: *By observing professor José's easy attitude and by reasoning about what he has told me during the walk, I thought about how his feeling towards the 'in, with and for" world aspect was the same feeling I had when I was observing him during the experience: easiness, this is the word. (E4)*

According to Barcelos and Noal (1998), modernity opted for transmitting knowledge rather than for investing in building it. Based on the evolution of the Cartesian thinking, knowledge was split into scientific, ethical, and popular knowledge, and it has forged the dichotomy between reason and subjectivity. The great challenge at this point lies on integrating the academic knowledge to the empirical knowledge built overtime by different cultures. Cultural knowledge has been often neglected in anthropocentric societies (Lemos; Maranhão, 2008).

Accordingly, many narratives of the herein assessed teachers highlighted the relevance of getting scientific knowledge to students multiple realities and experiences of the world: *She sad that many students, whenever their conducted assignments is linked to daily life and close to their personal reality, were extremely impressed with how much they could learn and it was the way for her to make them think about their own attitude towards the world. (C9) […] she said that promoting seminars about environmental topics in her classrooms allowed her to encourage students to reason and these reflections featured environmentalized processes. (F10)*

González-Gaudiano (2005) addressed interdisciplinarity and trans-disciplinarity in environmental education, and highlighted the challenges this proposition faces when it tries to add these concepts to positivism-oriented discipline matrices in education institutions. Adding the environmental dimension to Higher Education discipline matrices means having different complexity degrees, and one of the main ones lies on preparing professors to boost the cross-sectional proposition, according to which, this behavior not only changes the traditional organization of knowledge, but also regards local activities and other knowledge fields close to students' reality. This scenario can be observed in the excerpt below: *Marilia also mentioned that randomly teaching is not the way. She stressed that professors must provide the tools for students to reason and to turn their reflections into reality through the practices they have learned. (C10). Yet, José told me that environmental education has great reflexive potential; however, only the act of reasoning is not enough. (E5)*

Thus, some narratives provide a reality based on the immediate and technicist escape from knowledge: *Something that called my attention was the professor who saw himself as 'old fashion'". He said that he did not use anything revolutionary; it was through chatting that he tried to make students think about the environment and he made it clear that he was pretty sure that they got to the place he wanted. (E7)*

According to Mezalira (2007), scientific and technological knowledge detached from social reality is objective. In other words, it leads to accuracy without contextualization and problematization to disclose the truth about whatever one is assessing. Several professors see coherence in implementing an environmentalized discipline matrix, since their speeches are related to using their experiences in environmental education: *At some point of the walk, I asked professor Juliano if he believed that Higher Education could extrapolate the anthropocentric perspective, without hesitation, he answered to the question before I even finished it, by saying that he truly believed in it, but that discussions in the university should make students reason about their personal lives or about any other scope rather than just the professional life. (D5) I was intrigued about the mentioning that environmental education also had the goal of teaching to live in the world. (F4)*

The transdisciplinarity stressed by the participants was pointed out by their personal experiences in professional life. According to Oliveira (2005), transdisciplinarity goes beyond disciplines, i.e., a topic, a problem or a goal that crosses different disciplines. Yet, the individual experiences of each professor are approached and preserved during teaching processes. Even if the discipline matrix has the duty to approach specific topics, transdisciplinarity overcomes discipline matrices when it comes to topics that demand dialogue among several views; it "represents the search for a common axiom among sciences, art, philosophy, religion and empirical/traditional knowledge, among others" (Oliveira, 2005, p. 336): *By questioning her about extrapolating the anthropocentric perspective in higher education, Valquíria assumed that it would depend much on the professor lecturing the classes, so that discussions would go beyond the anthropocentric scene. (A11)*

The personal and professional relationship category emerges as the way to show how our experiences exceed the limit of scientific knowledge, learning, and somehow change the existing dichotomies between body and mind, subject and object, nature and science. Experiences we have with the

world can help innovating our relationships when we realize that we are the flesh of the world (Merleau-Ponty, 1999) and that learning goes beyond ideas and concepts set to forge our skills and movements in, with and for the world.

Final considerations

The aim of the present study was to investigate curricular environmentalization from the ecophenomenological perspective, based on experiences lived by professors of a Biological Sciences Bachelor Degree course. In order to do so, PPC was used and search in course amendments was made to find disciplines presenting the features of an environmentalized discipline matrix. This search showed that the 10 Red ACES categories were not enough to find disciplines showing aspects of horizontal relationships between humans and the more-than-human world. This finding led to arguments about an 11th category, the herein called *perspectives of the more-than-human world.*

Environmentalizing the discipline matrix from the more-than-human world perspective is the possibility of ensuring horizontality in relationships by trying to act attemptively towards dualities between mind and body, subject and object, and nature and science. Thinking about a world centralized in the human being is also the way to dehumanize human contexts that support the anthropocentric society. Reflecting on the more-than-human viewpoint does not mean forgetting distinctions and differences, but understanding the effects that materialize, crush and shape human/ nature encounters. From this perspective, one can open room for better understanding the experience-sharing observed between humans and the things inhabiting the same world.

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