

# Connecting Regional Development to Environmental Education

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**Abstract**— *In this study we investigate how environmental education can be connected with the regional sustainable development. We perceive that the dialogues surrounding Environmental Education in formal education have been dividing opinions over the last two decades. This does not happen only in relation to the conceptual precepts, but mainly in relation to the field of activity. Our theoretical support comes from authors engaged with the Critical Environmental Education, signaling for the construction of what we call Reference Framework. Our research is developed from a qualitative perspective, having as a strategy the exploratory case study. For the analysis of the documents we make reference to the methodology of content analysis proposed by Bardin (2011) and reflective application of the Reference Framework. We argue that so far in Brazil, environmental education is divided into two major theoretical trends that reflect the practices of environmental educators. On the one hand, supporting a behaviorist / liberal / conservative tendency of Environmental Education (CARVALHO, 2001; GUIMARÃES, 2000; LOUREIRO, 2008), understand environmental practices from its immediate resolution dimension, focusing actions that situate environmental practices through changes in social behaviors, mostly promoted by environmental activism. On the other hand, we have the opposite, that is, the popular / critical / emancipatory tendency which situates its argumentative and practical content in the significant assumption of a new societal posture in relation to the economic*

*models adopted. It establishes the connection between environmental education and local / regional development, delineating a perception of reality, forming a dimension of creating other ways of relating human and non-human, including the emergence of a rationality that impresses ethical socio-environmental values, other forms of understanding of the world and the concept of environmental rationality.*

**Keywords**— *Environmental Education; Regional Development; Theoretical Trends.*

## I. INTRODUCTION

The Italian philosopher Nuccio Ordine, in his book entitled *L'utilità dell'inutile. Manifesto (The Usefulness of the Useless: A Manifesto)*, when mentioning the importance of humanistic knowledge and scientific research, emphasizes that "all luxuries considered useless have a growing duty to nourish hope, to turn its uselessness into a most useful instrument of opposition to the barbarism of the present"<sup>1</sup> (2016, p. 26), an allusion to the present times in which the arts, philosophy, theater, music and all cultural manifestations are now considered to be useless.

In this context, an environmental issue is included, a knowledge considered useless, conceived from

<sup>1</sup> Our translation of "todos os luxos considerados inúteis, têm o dever cada vez maior de alimentar a esperança, de transformar a sua inutilidade num utilíssimo instrumento de oposição à barbárie do presente"

a conservationist perspective, whose importance is restricted to the planting of trees, environmental day celebrations and environmental preservation campaigns that are usually disconnected from the political struggles in which environmentalism flourishes (FRACALANZA, 2004).

In this perspective, the environmental issue in the school, over the past twenty years has been presenting signs of its epistemic fragility in the educational practices, as referenced in the research called *The different tints of Environmental Education in Brazil*<sup>2</sup>, elaborated by the Ministry of the Environment. Such research presents the profile of the Brazilian Environmental Education from 1997 to 2007.

The evidence indicates that even with the existence of the law that establishes the National Policy for Environmental Education (Política Nacional de Educação Ambiental) – PNEA, there is still no public policy of environmental education in educational institutions. That results in the conceptual and epistemological multiplicity that schools present, marked by the educational practices and by the absence of specialized personnel in the area, as we can verify in the following excerpt:

[Certain difficulties cited in this dimension can be understood as effects of a practice under construction: lack of clarity regarding environmental epistemology, [and] of knowledge of disciplinary interfaces with environmental education. It was also mentioned the need to deepen reflection and praxis on the methodological aspect in order to reach the transversality of the environmental theme (2009, p.190).]

Certas dificuldades citadas nessa dimensão podem ser entendidas como efeitos de uma prática em construção: falta de clareza com relação à epistemologia ambiental, de conhecimento das interfaces disciplinares com a EA. Também se mencionou a necessidade de aprofundar a reflexão e a práxis na vertente metodológica para atingir a transversalidade da temática ambiental”

In this way, we also underline the MA thesis carried out by Luciana e Sá Alves, from 2006, entitled *A Educação Ambiental e a Pós-Graduação: um olhar sobre a produção discente* (Environmental Education and Post-Graduation: a look at the student production). In this research, she carries out a detailed survey on the academic

and scientific production on Environmental Education in Brazil from 1988 to 2006. It should be noted that of the 1064 papers supervised on Environmental Education at the time, collected through the database of CAPES – Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (Coordination for the Improvement of Higher Education Personnel), the term "epistemology" appears only twice, referring initially to the Tbilisi Conference when it mentions that:

[...] interdisciplinarity is defined as the interaction between two or more fields of study, ranging from the simple communication of ideas to the mutual integration of leading concepts, epistemology, terminology, procedures, data, and the organization of research and of teaching (2006, p.20).]

[...] a interdisciplinaridade é definida como a interação entre duas ou mais disciplinas, que pode ir da simples comunicação de ideias até a integração mútua de conceitos diretores, epistemologia, terminologia, procedimentos, dados e a organização da pesquisa e do ensino (2006, p.20).

In a second moment, the author herself uses the term to justify the content analysis carried out in her work, which can be described as follows:

[...] descriptive analysis of a group of 77 reports, which corresponds to the second research front of the Thesis, aimed to explain the content of the Theses and Dissertations regarding the problems investigated, the theoretical references of support and the methodological procedures adopted. In addition, based on the epistemology of FLECK (1986), more specifically in the analytical categories "style of thought", "collective of thought" (2006, p 49).]

[...] análise descritiva de um grupo de 77 relatórios, que corresponde à segunda frente de investigação da Tese, teve como objetivo explicitar o conteúdo das Teses e Dissertações quanto aos problemas investigados, aos referenciais teóricos de apoio e aos procedimentos metodológicos adotados. Além disso, ao fundamentar-se na epistemologia de FLECK (1986), mais especificamente nas categorias analíticas "estilo de pensamento", "coletivo de pensamento" (2006, p 49).

<sup>2</sup> “Os diferentes matizes da Educação Ambiental no Brasil” in its original, in Portuguese.

Also in the same direction, we highlight the work of Carvalho and Feitosa entitled *A produção brasileira de teses sobre educação ambiental na biblioteca digital brasileira de teses e dissertações – BDTD: uma análise temática* (The Brazilian production of theses on environmental education in the Brazilian digital library of theses and dissertations – BDTD: a thematic analysis), from 2011. Such work presents a research whose goal aimed at the recovery, cataloging and analysis of theses on Environmental Education available at BDTD. Once again, the thematic "epistemology" was not identified, nor was the term itself in the dissertations and theses recovered.

In these terms, it is possible to see that the epistemic issue in the environmental educational practices in the school presents incongruities that need to be discussed, since the criticism to the school projects that say they are based on environmental education establish a contradictory field of action, whose result reflects in practices devoid of the understanding of critical environmental thinking.

In view of this situation, the present thesis characterizes a careful effort to problematize the environmental issue in the school universe. It attempts to find ways that signal to an environmental education that transgresses the behaviorist postures, characterized by practices that only aim at the change of behaviors in relation to environmental problems, disregarding the economic models responsible for the production of misery (LIMA, 2009).

In order to do so, the environmental issue in the school was linked to regional development, establishing a necessary approximation, whose intended implications suggest the questioning of the development models that are associated with the degradation of nature and of human condition, thus raising the proposed reflection in this thesis.

Given this, we understand that the dialogue poses a burning challenge, both for the nature of the collective understanding in relation to environmental education, which suggests an epistemic variation regarding environmental educational practices, as for the social representation of an environment that provides resources that are redefined and valued from their transformation.

In this perspective, in times of barbarism of the human and environmental condition, we can infer the necessity, as Ordine points out, of problematizing the useless so that it can be transformed into an instrument of subversion of the crisis that presents itself. In other words, this work is an unfinished essay, whose proposal, in general terms, focuses on the elaboration of a Reference Framework that equips teachers and the school community in the elaboration and evaluation of environmental educational practices in schools.

In this direction, we underline that formal environmental education aggregates in its contours different epistemic faces, constituted by narratives, methodologies and structures that are particular, culminating in a plurality of conceptions that do not always establish congruence.

The reflection carried out in relation to Environmental Education and Regional Development subsidized the pedagogical perspective adopted in this scientific work, helping in the elaboration of what has been called the Reference Framework, whose function is the construction and/or evaluation of Formal Environmental Education projects and its repercussion in the constitution of Regional Development.

In the methodological way, the path in the research movement is based on the methodology adopted, situating it from a qualitative perspective, describing the course carried out by the researcher during the elaboration of the artifices that make possible the completion of the thesis.

We chose the exploratory case study as a research strategy, consisting of a collection of data that combined three different sources of information, such as: documents, interviews and reflective application of the Reference Framework. The analysis of the information was carried out through content analysis as the starting point.

Finally, the final considerations are pointed out, indicating the possible suggestions from a perspective of incompleteness, announced by the impossibility of exhausting the dialogue in relation to the proposed theme. However, as a final inference, the Reference Framework is revisited as a theoretical construct that can give conceptual subsidies to schools in the construction and/or evaluation of environmental education projects based on a critical perspective for regional development.

## II. CONJECTURES ON REGIONAL DEVELOPMENT AND ENVIRONMENTAL EDUCATION

Environmentalism as movement that criticizes the relations established between man and nature began in the 1950s, becoming a reference for global manifestations of a new environmental order, which, over the past fifty years, has contributed significantly to the debate on environmental issues in civil society.

In this way, intellectuals and activists moved the world with criticism regarding the exploitation of natural resources, announcing the environmental crisis arising from a model of development that would not be able to sustain itself without the unreasonable use of the natural environment.

In the academic context, we highlight the work of the North American writer, scientist and environmentalist Rachel Carson, which denounces the contamination of

water and soil by pesticides. The influence of her work was decisive for the US government to prohibit the use of dichlorodiphenyltrichloroethane, known as DDT<sup>3</sup>, in the United States (DAMATO; TORRES; MALM, 2002).

The decades of the 1950s and 1960s, because of technological advances based on the premises of Western rationality, substantially increased production capacity and changes in the natural environment, especially in more developed countries, and the disastrous results of this indiscriminate manipulation of natural resources were clearly visible in later decades. Morin, on environmental disasters, mentions:

[The meta-national and planetary aspect of ecological danger came with the announcement of the death of the ocean by Ehrlich in 1969 and the Meadows report commissioned by the Club of Rome in 1972. After the worldwide apocalyptic prophecies of 1969-1972, there was a period of multiplication of local ecological degradation-fields, forests, lakes, rivers, polluted urban agglomerations (2002, p. 68).]

O aspecto meta-nacional e planetário do perigo ecológico surgiu com o anúncio da morte do oceano por Ehrlich em 1969 e o relatório Meadows encomendado pelo Clube de Roma em 1972. Após as profecias apocalípticas mundiais de 1969-1972, houve um período de multiplicação das degradações ecológicas locais-campos, bosques, lagos, rios, aglomerados urbanos poluídos (2002, p. 68).

The environmental situation of Brazil in this period was not different; reflecting devastating images, whose efforts to establish a confrontation against the hegemony of modernity resulted only from the actions of small organized groups and state environmental agencies. Dias, on the environmental crisis faced in Brazil in this period, asserts:

[The situation in Brazil was the same as in the vast majority of poor countries, that is to say, just where environmental education would be most needed, given the cruel socioeconomic realities established there, under the aegis of

imposed development models, of a notable capacity for degradation of the quality of life, environmental education did not develop enough to be able to produce the necessary transformations (1992, 23).]

A situação no Brasil foi a mesma da grande maioria dos países pobres, ou seja, justamente onde a EA seria mais necessária, dada as cruéis realidades socioeconômicas ali instauradas, sob a égide de modelos de desenvolvimento impostos, de notória capacidade de degradação da qualidade de vida, a EA não se desenvolveu o suficiente para ser capaz de produzir as transformações necessárias (1992, p. 23).

Meanwhile, although the Brazilian reality reflected the developmental project<sup>4</sup> that arised in the end of the 1960s, groups of political exiles who experienced the European environmental movements and returned to Brazil in the late 1970s joined other advocates of the ecological movement, among them, José Lutzemberger. In the 1980s, especially in the state of Rio Grande do Sul, the consolidated strong conflicts against multinational companies. Gonçalves, on the consolidation of the environmental movement in Brazil, states:

[It is interesting to note that the environmental movement is socially more rooted in Rio Grande do Sul, where the AGAPAM ("Gaúcha" Association of Environmental Preservation) brought together ecologists from the struggle against Borregaarde, a multinational company that polluted the waters of the Guaíba River in the great port of Porto Alegre and where José Lutzemberger, former agronomist of a large multinational company of agrochemicals, breaks with the perspective of agrochemicals and takes on the ecological and social cause deeply. Most of the political exiles who embrace the ecological cause are concentrated in Rio de Janeiro, where some environmental struggles were already taking place, especially in the [region of] North Fluminense (Campos and Macaé,

<sup>3</sup> Dichlorodiphenyltrichloroethane, better known as DDT, is a pesticide whose properties were discovered in 1939 by Paul Müller. With high lethality, DDT easily crosses the exoskeleton of insects affecting the central nervous system (DAMATO; TORRES; MALM, 2002).

<sup>4</sup> The 1970s were marked by the works of the 'economic miracle period', prompted by the military government, whose predominant characteristics centered on occupation, territorial integration and pollution as inevitable consequences for the consolidation of progress in Brazil (SATO, 2003)

for example) and in Cabo Frio (struggle for the preservation of the dunes) (1990, p.16).]<sup>5</sup>

In this scenario, the environmental movement translated a relevant landmark for the propagation of environmental issues in various sectors of civil society, incorporating discussions in government agendas following the United Nations Conference on the Human Environment, held in Stockholm, Sweden, in 1972, when the development model began to be questioned by a probable scarcity of natural resources.

In this perspective, the discourses on the environmental issue highlight the antagonism between government policies and environmental movements, characterizing a unique challenge, whose struggle was centered on the denial, by environmentalists, of the current corporate model legitimized by the American way of life, whose nature is understood as an inexhaustible source of resources.

In view of this, the dialogue on environmental issues in Brazil, especially since the United Nations Conference on Environment and Development – Eco 92, held in Rio de Janeiro, Brazil, in 1992, and the elaboration of the National Curricular Parameters – PCNs, by the Ministry of Education, in the year 1996, begins to be part of the school context.

With the enactment of Law number 9,795 of April 27, 1999, which instituted the National Policy for Environmental Education, Environmental Education for formal education came to incorporate only educational systems linked to the Ministry of Education – MEC and non-formal non-formal, Environmental Education, whose target audience covers the portion of society that is not in school, is left under the responsibility of the Ministry of the Environment.

However, it is important to emphasize that the actions of the respective Ministries, of Education and of the Environment, seek to avoid an isolated work. For this, they bring their policies together through a Management Body, whose function is the coordination of the National

Policy for Environmental Education – PNEA, encouraging the guidelines for the implementation of Environmental Education at the national level.

In this perspective, the distinction between formal and non-formal education for Environmental Education has consolidated an important delimiting framework for the applicability of public policies, distinguishing the attributions between the Ministries of Education and of the Environment.

However, the distinction between formal and non-formal education for Environmental Education, sanctioned by the Law 9795/99, reflected directly in the educational practices promoted in schools, since the epistemic identity of environmental practices had its conceptual genesis in actions that were designated for a non-school audience.

In this scenario, schools began to imprint in their environmental education practices actions that were carried out with a non-school audience, substantially neglecting the historical precepts of Environmental Education itself, through multi-game competitions, competitive games, or, then, through awareness raising activities involving dances and festivities, called environmental education. Regarding the Environmental Education practices carried out by the teachers in the school, Sato emphasizes:

[...] specific actions of hugging trees or paper recycling workshops, without any critical posture to consumer models experienced by societies, or by the analysis of man's dominant mode of relationship to nature with high anthropocentric value. [...] The industries are campaigning in schools through competitive and non-solidarity games to collect aluminum "cans" while encouraging more consumption for the awarding of computers and other school materials [...] (2001, p.16).

[...] ações pontuais de abraçar árvores ou oficinas de reciclagem de papel, sem nenhuma postura crítica dos modelos de consumo vivenciados pelas sociedades, ou pela análise do modo de relação dominadora do ser humano sobre a natureza, com alto valor antropocêntrico. [...] As indústrias fazem campanhas nas escolas, através de jogos competitivos e não solidários, para coleta de "latinhas" de alumínio, enquanto incentivam mais consumo para premiação de computadores e de outros materiais escolares [...] (2001, p. 16).

<sup>5</sup> In the original Portuguese: É interessante observarmos que o movimento ecologista é socialmente mais enraizado no Rio Grande do Sul, onde a AGAPAM (Associação Gaúcha de Preservação Ambiental) reuniu ecologistas a partir da luta contra a Borregaard, empresa multinacional que poluía as águas do Rio Guaíba, na grande Porto Alegre e onde José Lutzemberger, ex-agrônomo de uma grande empresa multinacional de agrotóxicos, rompe com a perspectiva da agroquímica e assume profundamente a causa ecológica e social. A maior parte dos exilados políticos que abraçam a causa ecológica se concentra no Rio de Janeiro, estado onde já se desenvolviam algumas lutas ambientalistas, sobretudo no norte-fluminense (Campos e Macaé, por exemplo) e em Cabo Frio (luta pela preservação das dunas) (1990, p. 16).

In view of this context, another conceptual aspect emerges for Formal Environmental Education, announcing in its propositions the need to promote environmental ethical relations, articulated through an educational project that aims to overcome behaviorist learning, to those that aim at the consolidation of "ecologically correct attitudes" within the school (LIMA, 2009).

In this direction, two different conceptual postures are inferred in relation to environmental educational practices in the school. On the one hand, practices that highlight the conservationist and naturalistic nature, commonly perceived in natural sciences projects, and, on the other hand, practices that intend, in their pedagogical movement, the consolidation of a society that holds political actions, aiming at an intervention in the world in a critical, reflective and dialogic form, based on the responsibility towards all beings (KAWASAKI and CARVALHO, 2009).

In this way, another conceptual possibility emerges for Environmental Education, unfinished in its epistemic dimension, but announcing other ways of doing science, provoking the overcoming of social inequalities, which does not imply a perspective of homogeneous concepts, but rather, the incitement of the unveiling of a world yet to be discovered. In relation to the unveiling of the world Velasco asserts:

[Reality must be "unveiled" because, in its naive, that is, a-critical and alienated apprehension, the social mechanisms of domination-repression-destruction that articulate its very heart are hidden. Hence the "immersed consciousness" in this view of appearances must "emerge" in the process of discovering the hidden mechanisms (1999, 32).]

A realidade precisa ser "desvelada" porque, na sua apreensão ingênua, quer dizer, a-crítica e alienada, ficam ocultos os mecanismos sociais de dominação-repressão-destruição que articulam seu coração mesmo. Daí que as "consciências imersas" nessa visão das aparências devam "emergir" no processo de descoberta dos mecanismos encobertos (1999, p. 32).

The practices of Environmental Education in schools constitute, for the most part, actions that ratify the competitive values of excluding societies, reinforcing the mechanisms of social inequality learned throughout western history itself. In this bias, it is emphasized that the Environmental Education trajectory, over the last years, denotes the complexity and the tension that the environmental issue in the school has been suffering, as

much by the theoretical obliviousness as by the methodological simplicity adopted (FRACALANZA, 2004).

In this context, referring to Fracalanza's thinking about simplicity in the practices of Environmental Education adopted in the school, Sato talks about the uncritical understanding of the political consciousness that some teachers have about environmentalism, as if "environmentalism was limited to commemorative dates and not set as a project of life, of social struggles"<sup>6</sup> (2001, p.16).

That said, we can corroborate the understanding that Environmental Education should consolidate the possibility of a different perspective of understanding the world, aiming at the encounter between ethnic, cultural and social differences, being an exponential element for the subversion of the mechanisms of maintenance of power, of the division of classes and of the excessive authorization of dominating processes.

Environmental Education, understood as such, is an education that brings together values that foresees another society, with social actions of respect for others, transgressing the ecologically correct attitudes constantly promoted in advertisements sponsored by large international corporations that also include the large polluting companies.

Environmental Education, both in non-formal and formal education, claims the re-signification of the world, considering the environment as a space of perception of differences and, above all, acceptance of the human condition, that is, the legitimation of the decrease of social inequalities through the change of the established economic model.

In this way, it is understood that the school that intends to delineate its educational practices through a critical environmental project should be clear that the first objectives in its guidelines must move towards social emancipation, rethinking the curricular structure through the integration of activities and social actors.

We also emphasize that critical environmental educational practices in the school suggest the effective action of educators in the sense of occupying public spaces, since the understanding of education as a political-pedagogical doing emphasizes the political struggle that Environmental Education plays in civil society.

In this conception, the insertion of Environmental Education into civil society through the school can be a strategy of subversion of the current society, strengthening social relations that dignify the human

<sup>6</sup> Our translation of "ambientalismo se resumisse a datas comemorativas e não configurasse como um projeto de vida, de lutas sociais".

condition to the detriment of the economic values commonly proclaimed.

It is important to note that although Formal Environmental Education does not establish a guarantee of abrupt social changes, through it there is the possibility to seize new learning, whose respect for the many forms of life safeguards the emergence of a new planetary culture, ecologically viable.

In this understanding, the school's need to comprehend its role in this process of constructing pedagogical intentions, that is, of learning to live in a democratic, tolerant and collaborative way, emerges. The dimension of the acceptance of the other must be taught or conquered through school relations.

Environmental Education, in this perspective, fosters the organization of joint decisions, establishing the social identity in the school, whose potentialities are evidenced from the collective participation, placing the objectives that should, as a priority, aim at the formation of democratic citizens.

Given this view, the role of the political-pedagogical project becomes singular, outlining the sequence of strategies, objectives, purposes and actions that schools should take towards the school that intends to support its guidelines in Environmental Education. The school, anchored in an environmental perspective, allows the overcoming of individualism, contributing to the design of a participatory, active and environmentally fair society in its ethical values.

In this way, it is up to the school to review the concept of curriculum that permeates its educational activity, re-signifying the conceptual matrices of the intended pedagogical movement, that is, the paths that must be traced in the construction of relationships that value the human condition in its first instance.

In this direction, the curriculum guided by the environmental perspective signals to the understanding that the school is a space for acquiring knowledge that converges towards a necessary transdisciplinarity, and Environmental Education is a reflective component of all areas of knowledge.

However, it is necessary to reorganize school curricula, not only in their objectives, but also in their philosophical premises, redefining their concepts and methodologies of action, since:

[...] by problematizing human formation, education, school education, school curriculum and teacher training, we can conclude that the insertion of the environmental education that we want and need goes through the reformulation of teacher training in the perspective of overcoming practical rationality, defining it as

the formation of the educated teacher (critical intellectual), investing in his/her role in the construction and realization of a school curriculum that guarantees the treatment of environmental themes as nuclear activities in schools, understood as an institutional social space whose role is to contribute to the full and omnilateral formation of the subjects by the critical appropriation of historically and socially elaborated culture to instrumentalize them in the realization of a critical and transformative social practice. This is the most elaborate form that we could develop in this study so that the insertion of environmental education in schools overcomes the weaknesses with which it has been incorporated, especially in its spontaneous form, often delegated to projects directed by social groups that are very distant from principles of environmental education with a view to social transformation (TOZONI-REIS, CAMPOS, 2014, p.159).]

In this sense, Environmental Education is not an isolated area of knowledge, but rather an interdependent one, aiming at the formation of intellectual agents that can overcome social and environmental dilemmas, engaged in the constitution of a just and fraternal society. In this way, critical Environmental Education enhances the formation of actors engaged in the process of changing the contemporary societal paradigm.

Another point deserving of highlight refers to the differentiating nucleus between Environmental Education and Ecology. Ecology is the perception and analysis of organisms or groups found in the environment (ODUM, 2006), while Environmental Education translates the complex relationship of the different areas of knowledge. Treating Environmental Education as the teaching of Ecology is to reduce the environmental dimension to the purely technical aspect, therefore, as a further challenge, it is to design an Environmental School Education from the creation of new teaching methodologies.:

In this way, it is evident that the pedagogical proposal of the school needs to be dialogued, articulated democratically within the school community, being the key piece for the constitution of an environmental praxis capable of creating reflective conditions for the combat of the imbalance in social relations.

In this perspective, Environmental Education translates a relevant space for the consolidation of ethical relations, subverting the current paradigm and taking on new looks in relation to the economic models that limit the meaning of the expression 'development'.

In this context, Environmental Education allows the creation of critical spaces, helping people to realize that the environmental problem does not dichotomize man and nature, but that the human condition is part of this nature, which directly implies the redoing of educational practice itself, that is, in the construction of the environmental identity.

In this perspective, Environmental Education is characterized as a delineation of epistemological character, provoking the creation of methodologies that enable the students to understand their role in the world, reflecting the origin of environmental problems. In this way, it is necessary to reinforce that the implementation of Environmental Education in schools must be integrated into the political-pedagogical project, thus materializing a collective proposal in which the school community can, collectively, give their opinion, propose, and define the actions that will be carried out.

In this way, learning becomes more meaningful, establishing a constant dialogue between teachers, students, technicians and parents within the school. Environmental Education becomes part of the daily school, contemplating the contents and the programs taught.

Another point that needs to be highlighted is the understanding that the projects that involve Environmental Education do not present immediate results, thus being a slow process that starts from the gradual assimilation of the community involved, since the objectives, methodologies and constant reflection need to be rethought daily. For this, some theorists suggest the perception of the school from a holistic vision, surpassing the exclusive dialogue of the environmental preservation. But it is undeniable that these actions are also necessary for school reflection.

In this perspective, the recognition of the environmental perception of the community involved becomes unique, since it materializes the relational forms that the school community establishes with nature, evidencing the conception of environment and nature of the actors involved. In this scenario, it can be said that the educational practices that permeate the environmental performance in the school should foster criticality, promoting actions to overcome environmental problems through a conceptual, historical and reflective analysis of environmental problems.

However, we highlight that the conceptual, historical and reflective analysis is not an exclusive condition of environmental education, but it should impress the pedagogical movement of any school, even those who do not want to highlight the environmental issue in its motto. This reflective attitude establishes an educational process that subverts the mere transmission of knowledge.

Furthermore, we understand the urgent need to combine the environmental issue with the perspective of local and, consequently, regional development, since formal environmental education is only relevant from the transformations of social relations that it offers in school, re-signifying the perspective of the universe in which the student community is inserted.

In this perspective, the imbrication between environmental education and local/regional development poses a unique challenge, since it refers to the process of assumption of the political-pedagogical dimension in which school must be situated, that is, of the assumption by the school institution of an emancipatory social policy, as Andrade points out:

[Environmental Education practices make of it an important local development mechanism because it highlights the relationships between the personal and interpersonal dimensions and stimulates the constitution of individual and collective identities (2013, p. 06).]

As práticas de Educação Ambiental fazem com que esta se torne um importante mecanismo de desenvolvimento local porque destaca as relações entre as dimensões pessoais e interpessoais e estimulam a constituição de identidades individuais e coletivas (2013, p. 06).

In this dimension, we emphasize that the concept of "location" is closely linked to the idea of territory, but it is not its result, nor its determination, since the location can be understood as a space "defined from the references, potentialities and needs that the community enunciates"<sup>7</sup> (FERRARINI, 2012, p 235).

In this standpoint, the necessary connection between environmental education in the school and local/regional development is justified, emphasized by the understanding that environmental educational practices can offer other ways of understanding the concept of location, directing paths that point to the understanding of this space from its dimension of sociability and social cooperation, as described by Ferrarini:

[Localization is the set of initiatives that aim to create or maintain spaces of small-scale sociability, community-based, based on face-to-face relationships, oriented towards self-

<sup>7</sup> Our translation of “definido a partir das referências, potencialidades e necessidades que a comunidade enuncia”



sustainability and governed by cooperative and participatory logics. (2012, p. 236).]

Localização é o conjunto de iniciativas que visam criar ou manter espaços de sociabilidade de pequena escala, comunitários, assentes em relações face a face, orientados para auto sustentabilidade e regidos por lógicas cooperativas e participativas (2012, p. 236).

Given this perspective, we infer that the connection between environmental school education and local/regional development delineates a new reality, forming a dimension of creation of other ways of relating human and non-human, including the emergence of a rationality that imprints ethical socio-environmental values. Leff, as a proposal to create other forms of understanding the world, discusses the concept of environmental rationality:

[In this way, environmental rationality is based on a new ethics that manifests itself in human behavior in harmony with nature; in principles of a democratic life and in cultural values that give meaning to human existence. These are translated into a set of social practices that transform the structures of power associated with the established economic order, mobilizing an environmental potential for the construction of an alternative social rationality (2001, p.85).]

Desse modo, a racionalidade ambiental se funda numa nova ética que se manifesta em comportamentos humanos em harmonia com a natureza; em princípios de uma vida democrática e em valores culturais que dão sentido à existência humana. Estes se traduzem num conjunto de práticas sociais que transformam as estruturas do poder associadas à ordem econômica estabelecida, mobilizando um potencial ambiental para a construção de uma racionalidade social alternativa (2001, p. 85).

It is also convenient to point out that the imbrication between environmental education and local/regional development suggests a dialogue in which the social actors consciously assume the process of autonomy, whose values of development come to be understood from a demystified perception of the place, subverting the idea that local development only reaches a region through higher spheres, either by the investment

made by private companies or by governmental bodies. Dowbor in relation to the understanding of society about local/regional development, elaborates:

[Local development has always been seen as a process that reaches a region or descends from higher spheres in the form of public investments or the setting up of private companies. Modernization, in the broad sense of generating employment and income, valuing small and medium enterprises, combating poverty, reducing inequalities and providing quality public policies, tends to be seen as dynamics that comes from outside and that the community expects in a passive way (2010, p.101).]

O desenvolvimento local sempre foi visto como processo que chega a uma região ou desce de esferas superiores, sob a forma de investimentos públicos ou instalação de empresas privadas. A modernização, no sentido amplo de geração de emprego e renda, valorização da pequena e média empresa, combate à pobreza, redução das desigualdades, provimento de políticas públicas de qualidade, tende a ser vista como dinâmica que vem de fora e que a comunidade espera de forma passiva (2010, p. 101).

Given this view, the function of environmental education is perceived as dynamics that instigates new understandings regarding the idea of development, signaling to environmental practices that transgress environmentalist practices, whose actions are summarized in activist practices of protection of the environment, distanced from a reflective posture about the constituent processes of Formal Environmental Education.

In this way, environmental education, understood as a factor congruent to local/regional development, suggests the design of educational practices based on critical and ethical relations, highlighted by social responsibility. Sauvé, on the role of environmental education in local communities with a view to regional development, expounds:

[Environmental education aims at inducing social dynamics, starting in the local community and later on into broader networks of solidarity, promoting a collaborative and critical approach to socio-environmental realities and an autonomous and creative understanding of the problems that are

presented and of the possible solutions for them (2005, p. 317).]

A educação ambiental visa a induzir dinâmicas sociais, de início na comunidade local e, posteriormente, em redes mais amplas de solidariedade, promovendo a abordagem colaborativa e crítica das realidades socioambientais e uma compreensão autônoma e criativa dos problemas que se apresentam e das soluções possíveis para eles (2005, p. 317).

In this sense, the approximation of local/regional development and environmental education in schools inspires an education, in function of its political perspective, which potentiates the overcoming of behaviorist learning, since the notion of social praxis, due to constant reflection about the educational action itself, causes the social actors to perceive themselves as constructors of their own history and, consequently, of their localities (SAUVÉ, 2005).

In this perspective, the concept of Formal Environmental Education adopted for this thesis signals to an understanding of educational practice that directly questions the development models, emphasizing the creation of new societal postures in relation to the economic models.

We elaborated a Reference Framework with thirteen epistemic dimensions /They are: critical environmental practices; environmental ethics; dialogue; overcoming behaviorist learning; political education; regional/local belonging; interdisciplinary predisposition; perspective of complexity; social transformation; curricular environmental insertion; rupture of the naturalistic limits; reflection on pedagogical practice and continuous qualitative evaluation.

In this context, the epistemic dimensions indicate an itinerary suggestive of Formal Environmental Education that allows the construction and/or evaluation of environmental educational projects that intend to articulate their actions from a critical perspective, enabling teachers to access a pedagogical instrument that can be used in different areas of knowledge in an interdisciplinary way.

In this way, the Reference Framework sets out a pedagogical proposition that has as its singular notion the deconstruction of the uncritical actions that limit the environmental perspective in the school to the campaigns of environmental preservation, commemorative dates and awareness-raising techniques, decontextualized of the political conflicts in which environmentalism arose.

In this understanding, critical Formal Education was instituted through the establishment of dialogue, a

unique condition for the democratic elaboration of actions that seek to problematize reality, as well as recognize the urgent need to overcome the social distancing imposed by religious, economic, political, and ethnic order, building the collective participation necessary to overcome the socio-environmental crisis.

In this bias, the Formal Environmental Education intended, by contradicting the behaviorist learning in education, points to the structuring of environmental projects that comprise the socio-environmental crisis from its historical assumptions.

In this context, we can infer the existence of a political status that governs school environmental actions, not being possible to consider the educational practices as neutral actions, since they congregate in their epistemic premises the claim of a new society, both in its pedagogical sense as through the political perception of their relations through a culture of environmental solidarity.

In view of the panorama presented, we can corroborate that environmental education, as it was announced earlier, is closely linked to local/regional development, which was denominated in the Reference Framework as an epistemic dimension of regional/local belonging. The imaginary construction of belonging propels a pedagogy of involvement, provoking social actors to rethink their problems from the proposition of ideas that come from their surroundings, whose practices of overcoming and proposition start from the community itself, the actors that know and perceive themselves in their own history.

In this sense, we understand that Formal Environmental Education needs to dialogue with different areas of knowledge, imbricating knowledge that challenged not only the interdisciplinary condition itself, but also the predisposition of the teachers involved who have to overcome scientific individualism and propose, collectively, actions that allow the resolution of the environmental problems defined in the school.

That is to say, in other words, that teachers who want to base their environmental educational practices in a critical posture should understand their practices from a perspective of complexity, due to the multidisciplinary nature that Formal Environmental Education demands.

Thus, we perceive that the Formal Environmental Education proposed points towards educational practices that establish meanings for the environmental issue, emphasizing social transformation as an unquestionable premise of educational actions, bringing the human condition closer to nature, being impossible not to perceive, for instance, poverty or intolerance of any kind as an environmental problem.

In this context, it is necessary to emphasize the need for a Formal Environmental Education that is

configured as a school proposal, and not as an isolated practice carried out by some teachers. The curricular dimension of environmental education triggers a burning need for understanding environmental issues as a proposal that should cover all areas of knowledge.

For this, a curricular environmental insertion that involves teachers, students, parents, community, extending the conceptual and practical limits of environmental education in the school, demystifying the exclusivity of the environmental debate to the natural sciences, is perceived as singular.

In this perspective, it is important to point out the necessary rupture of the naturalistic limits, that is, to dissociate from Formal Environmental Education the conception that environmental education practices circumscribe only the actions of the natural sciences, which substantially reduces the conception of critical environmentalism.

In this way, we should note that the rupture of the naturalistic limits implies the daily reflection of the pedagogical practice of the teacher who works with environmental education, suggesting the constant interpretation of her/his pedagogical practice, reviewing the adopted procedures, as well as evaluating the achievement of the goals which were proposed for the activity. In addition, we highlight as pressing in the conception of Formal Environmental Education, from a critical perspective, the continuous qualitative evaluation of the practices carried out in the school, which suggests the democratic dimension characteristic of the environmental education itself. This means that when environmental projects are constantly evaluated qualitatively there is the possibility to verify if the objectives are being achieved, and it is possible to establish, if necessary, changes that can improve the quality of the project.

It is also evident that the epistemic dimensions highlighted here as a proposal of the Reference Framework do not constitute a prescription, but deflagrates, on the conceptual premise of our thesis, the understanding of an unfinished synthesis that intends to be a critical reference in the construction and/or evaluation of environmental educational projects.

We can also understand that the Reference Framework, because it is an incomplete construct, allows its constant re-signification, being possible to configure it from the context in which the school is inserted. In this way, the epistemic dimensions can be altered, being suppressed or added according to the proposal of the environmental educational project.

However, it should be noted that the Reference Framework is an indicator that is based on a theoretical proposition whose assumption refers to Critical Environmental Education, that is, it inspires the execution

of practices that are congruent in their conceptual specificity, delineating categories, objectives, strategies and intended impacts that do not neglect the critical premise adopted.

In this sense, it is worth highlighting that the Reference Framework translates a pedagogical instrument that allows teachers an initial dialogue regarding environmental educational practices and, consequently, regarding the conception of environmental education in the school, signaling a challenging possibility that brings the school community closer for the elaboration of educational proposals that are pertinent to the confrontation of the identified environmental problems.

Still in this perception, we understand that the Reference Framework, based on the critical premise adopted, can help the school community in understanding the environmental problem itself, that is, schools are not always able to clearly visualize the environmental problems that are part of the daily life of the functioning school, for example, the conception of nature adopted by the school community.

And the Reflections on an epistemology for environmental education will initially establish the conceptual limits of our studies, indicating the emergence of environmental education as an interrupted course; the relation between knowledge and science; and the theoretical approximation between Formal Environmental Education and regional development.

We highlight the main currents of Brazilian environmental education, directing the dialogue to what was conventionally called in this Reference Framework a proposition to assist in the construction and/or evaluation of environmental educational projects.

### III. FINAL CONSIDERATIONS

Therefore, it can be inferred that in Brazil, to this day, environmental education is divided into two major theoretical trends that reflect the practices of environmental educators. On the one hand, supporting a behaviorist/liberal/conservative tendency of Environmental Education (CARVALHO, 2001; GUIMARÃES, 2000; LOUREIRO, 2008), environmental practices are understood from their immediate resolution dimension, focusing on actions that situate environmental doing through changes in social behaviors, mostly promoted by environmental activism. On the other hand, in the dimension of opposition, the popular/critical/emancipatory tendency is emphasized, whose argumentative and practical content situates for the significant assumption of a new societal posture in relation to the economic models adopted.

Thus, we can infer that the environmental educational practices translate a kaleidoscope of actions that denote a historical conceptual fragility, reflected in the

projects that are outlined in the school, through uncritical and decontextualized positions of the expropriation mechanisms linked to the dominant economic systems.

From this perspective, emphasis is placed on the urgent need to create pedagogical instruments that serve as indicators for the environmental issue in schools, with a view to the critical reflection of the environmental educational practice, overcoming the limitations and the fads that Formal Environmental Education has been facing.

In this panorama, we highlight the dialogical amplitude that the environmental question suggests. However, we concentrate our discussion on Formal Environmental Education, in an attempt to create a pedagogical instrument that allows the elaboration of environmental educational projects, signaling for a critical conception. We also hope that the pedagogical instrument favors the adoption of conditions for the re-signification of the environmental problems in the school, as well as in the elaboration of didactic materials.

Finally, we might infer that the connection between environmental education and local/regional development delineates a new reality, configuring itself in a dimension of creation of other ways of relation between human and non-human, understanding the emergence of a rationality that imprints socio-environmental values. Moreover, it establishes the link between the proposals to create other forms of understanding the world, and about the concept of environmental rationality.

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