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The Contribution of Minor Pedagogical Practices in the Context of Environmental Education

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Abstract

This excerpt from doctoral research, conducted in the Graduate Program in Science Education: Chemistry of Life and Health at Unipampa, seeks to understand how students finishing the 9th grade of lower secondary education and the 3rd year of upper secondary education at two public schools in Pelotas, Rio Grande do Sul, perceive climate emergencies. Inspired by Deleuze and Guattari's minor literature and Silvio Gallo's minor education, the study seeks to understand how the climate theme reverberates in everyday school life and how it has been incorporated into curricula and lesson plans. The initial analysis, based on interviews with seven students from a state school, shows that little or almost nothing substantial about environmental emergencies has been addressed pedagogically. This finding reinforces the need for more consistent criteria, themes, and proposals for an Environmental Education that is critical, sensitive, and capable of preparing students to deal with the subject.

Keywords: Climate crisis; Environmental education; Cartography; Minor pedagogical practices; Teacher education.

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1. Introduction

This text is an excerpt from a doctoral research proposal under way in the Graduate Program in Science Education: Chemistry of Life and Health at the Universidade Federal do Pampa (Unipampa). It arises from the urgency of understanding how students finishing the 9th grade of lower secondary education and the 3rd year of upper secondary education at two public schools in the city of Pelotas, Rio Grande do Sul, understand climate emergencies, a serious problem of our time, and what level of knowledge students have on this topic: whether or not they believe in climate change, and whether they can perceive or identify environmental problems near the areas where they live.

The discussion presented in this text also involves investigating how teachers have addressed this topic in the classroom, in which curricular components or contents it has been developed, and whether it has been developed at all. Faced with an increasingly evident climate change,[1] it becomes essential to investigate pedagogical practices that not only inform but also enable students and teachers to become agents of transformation in their realities.

Examples of more severe climate change, in line with extreme global events, occurred in the state of Rio Grande do Sul between 2020 and 2022, in the form of droughts and dry spells that caused major losses to agriculture and to the state's economy in general. Even more recent events that come to mind are the floods of April and May 2024, when we were struck by severe storms and excessive rainfall that suddenly caused the rapid rise of the Gravataí, Sinos, Caí, Taquari, and Jacuí rivers, among others. These rivers form a complex hydrographic system that meets the waters of the Guaíba River, the main body of water in the Porto Alegre metropolitan region, which subsequently flow into the Lagoa dos Patos and then into the ocean. It was an unprecedented flood that brought destruction and deaths, as well as losses to families and to the State.

Environmental Education, “recognized by the National Curriculum Parameters (PCNs) as a cross-cutting axis of the school curriculum, seeks to raise students' awareness of environmental issues and to foster critical and responsible citizenship” (Brasil, 1998, p. 27). However, it is worth asking: how is environmental education developed in schools? In which subject, or subjects?

In contemporary society, there is a growing difficulty in engaging young people with formal educational content, which creates significant challenges for educators and families. Understanding how to connect today's young people to these issues is perhaps an enormous challenge.

In view of this, it is essential to map the interactions that take place not only in the classroom but also in other learning spaces where practices and discussions about the environment and the climate crisis are addressed. In a scenario marked by environmental emergencies and a growing search for more meaningful learning, the inclusion of the climate crisis in the school curriculum opens spaces for reflection and experimentation. It is in this environment that students and teachers can become involved, exchange knowledge, and reinvent themselves in everyday life, experimenting with more practical, sensory, and collective ways of learning with and about the world through such urgent topics, shaping small pedagogical experiences capable of transforming the way of teaching and learning.

Situated in the field of Education, in two broad areas, Natural Sciences and Human Sciences, environmental issues and the climate debate can be discussed in a cross-cutting and interdisciplinary way in school pedagogical practices and in teacher education, for example by mapping experiences in order to prepare subjects capable of reading and intervening in the world they live in. This does not necessarily mean acting on “global battle fronts”, but rather thinking about small things,[2] about individual actions that can be carried out in one's everyday space: home, work, school, neighborhood. It means thinking about and producing the articulation of actions that can, in a certain way, raise a community's awareness of caring for its surroundings.

[1] _____ G1. (2022, February 23). RS tem 83% das cidades em situação de emergência [Rio Grande do Sul has 83% of its cities in a state of emergency]. https://g1.globo.com/rs/rio-grande-do-sul/noticia/2022/02/23/rs-tem83percent-das-cidades-em-situacao-de-emergencia-entenda-a-diferenca-entre-seca-e-estiagem.ghtml

Initiatives such as school gardens, clean-up campaigns, debates on consumption and sustainability, school forums, seminars, and talks, among other activities, enable students to engage directly with environmental challenges and develop social, ethical, and cognitive competencies through meaningful experiences. A practical example is a community garden, an urban garden, which can be built on a vacant lot or in the schoolyard and does not necessarily require many hands or extensive technical knowledge, and which, in a way, mitigates environmental problems or has positive impacts on young people's learning and on the environment.

2. Rio Grande do Sul and the impacts of environmental emergencies

The large volumes of water at the headwaters of these rivers caused them to rise, flooding and devastating cities, some crossed by the rivers, others along their banks, as well as part of downtown Porto Alegre, leaving them incredibly hostage to the waters. The volume of accumulated water was so great that the level of the Guaíba reached 5.37 meters, surpassing the historic floods of 1941, at 4.76 meters, and the floods of September and November 2023, with rises of 3.18 and 3.46 meters, respectively. Porto Alegre and Pelotas, which in 2022 suffered from drought, as did 83% of the State, experienced an extremely opposite reality, with excessive rainfall, but with similar damage in their own ways.

It is important to note that the waters of the Guaíba, which receive contributions from several rivers such as those mentioned above, flow into the Lagoa dos Patos and from there into the Atlantic Ocean. Although called a lagoon (*lagoa*), the Lagoa dos Patos is in fact a coastal lagoon (*laguna*), since it is connected to the sea. It also receives water from other rivers, such as the Camaquã River, and, because of the large volume it received, its level also rose, worsening the flooding in urban and rural areas near the city of Pelotas, Rio Grande do Sul, with the Laranjal neighborhood, or Laranjal Beach, severely affected.

This was one of the most striking climate events of recent decades: cities such as Porto Alegre, Canoas, and Novo Hamburgo suffered serious consequences, hundreds of families were left homeless, and basic services such as electricity, water supply, public transport, and Salgado Filho Airport were interrupted. In downtown Porto Alegre, for example, parts of neighborhoods were completely flooded, causing significant material losses. The floods also generated public health problems, with an increase in cases of diseases related to contaminated water, in addition to compromising the State's urban and agricultural infrastructure.

In the far south of the State, the city of Pelotas went on alert, and the damage was not greater because the prospect that the waters would reach the region led local authorities to act in advance and create protection mechanisms. One of these mechanisms was the “situation room”, where public officials, military personnel, and specialists coordinated actions such as the evacuation of risk areas, constant monitoring of water sources, and the construction of containment barriers that delayed the advance of the waters.

The experience of the situation room, created to articulate strategies for dealing with the crisis, shows how the combination of technical knowledge, inter-institutional dialogue, and coordinated action can produce effective responses in emergencies. It is a concrete example that, with shared knowledge and collective work, it is possible to achieve good results even in adverse scenarios.

With this in mind, let us take these episodes (droughts and flood) as reinforcement of the urgent need to understand and act on the impacts of climate change, a subject that is not new but that, over the decades, has become more evident, indispensable, and necessary to discuss, especially in school settings, since this urgency calls on us, especially in the field of education, to turn such experiences into objects of critical reflection and pedagogical action.

[2] *Conscious consumption*: reduce the consumption of disposable products, such as single-use plastics, and choose products with lower environmental impact. *Saving energy and water*: switch off electronic devices when not in use, reduce the use of air conditioning, and avoid wasting water. *Recycling and reuse*: sort waste for recycling and seek ways to reuse materials. *Support for sustainable projects*: contribute to organizations working for sustainability and the environment. *Sustainable transport*: choose means of transport such as bicycles, public transport, or electric vehicles.

3. Minor pedagogical practices in the context of environmental education

Situated on the plane of immanence of Deleuze and Guattari's (1977) minor literature and Silvio Gallo's (2008) minor education, and in view of the urgency of contemporary socio-environmental issues, which we call “climate silting”, it becomes essential to investigate how these issues reverberate in the daily life of two schools in the municipality of Pelotas, Rio Grande do Sul, how teachers are integrating the climate theme into their study and lesson plans and curricula, and how it appears in their pedagogical practices. Our anthropic actions interfere in complex systems and modify the environment we inhabit, and in turn this environment modifies us.

Drawing on the notion of minor literature, for which “all literature that proceeds from a minority is minor” and carries a political and collective power that “makes the majority language stammer” (Deleuze & Guattari, 1977, p. 29), and on Gallo's conception of minor education, which understands educational practice as something that “is not grounded in universal norms or generalizable methods, but in listening to what emerges from the encounter between educators and learners” (Gallo, 2008, p. 58), the aim is to understand how these singular teaching and learning experiences can generate new ways of thinking about education in the face of current climate emergencies.

Addressing such an urgent topic, one so necessary to discuss and address in the classroom, encourages a more critical, sensitive, and reality-connected education. More than dealing with isolated environmental issues, such as the climate crisis, as an activity for environment week, the objective is to understand how a cross-cutting issue, Environmental Education (EE), which runs through all areas of knowledge and demands new ways of teaching, learning, and thinking about environmental issues, can be conducted.

By investigating how the environmental theme appears in textbooks, for example, and how it is being addressed in these schools, the study seeks to reflect on pedagogical practices that go beyond technical and conceptual teaching, exploring innovative approaches that prompt students to rethink their attitudes toward their surroundings. Curricula need to signal to students that what we do has a strong impact on the environment and that, yes, our small actions matter. Acting in micro-spaces contributes to climate “desilting”.

The proposal is to value experiences that foster the connection between school content and everyday life, between what students bring with them from environments other than school: their homes, community associations, spaces of resistance and popular culture, community gardens, and so on. These are spaces that escape the linearity of formal education but promote active, reflective learning and, in some cases, social engagement.

A perspective that implies considering small things.

These interactions can be understood as *minor pedagogical practices*, or *minor practices*, inspired by Silvio Gallo's Minor Education, an approach that “moves away from normative and rigid forms of teaching, valuing a more fluid education centered on the subject's potentialities” (Gallo, 2008, p. 89). In other words, minor practices arise from the desire to listen to what is often silenced at school: the small gestures, the almost imperceptible events that run through teachers' daily lives and that, even if they do not fit into the grand pedagogical narratives, have an undeniable formative power.

The proposal emerges from the urgency of a time traversed by the desire for a pedagogical practice that allows itself to be affected, that moves from what escapes instituted forms; it arises from different classroom contexts and seeks to redesign the territory of teaching and learning in the field of education. This proposal seeks not only to address how environmental emergencies cut across school life, but to map what emerges in the daily life of the school and of non-formal learning environments: affects, displacements, encounters, the flows of students, their interests, their needs, even if this runs counter to the expected linear form of education.

In this context, we can, for example, map practices that involve writing and are heavily charged with subjectivity, such as writing notes in class, so common among students, or epistolary letters, widely used a

few decades ago as a communication tool and now considered outdated, but which carry a historical context and a power in which giving and speaking of oneself are singular events.

Writing diaries, blogs, zines, and student newspapers in which students can narrate their own experiences, among other examples, can be presented as a form of resistance. An act, ethical, aesthetic. Political.

Creating environmental resistance in the field of writing, developing newspapers and zines that question problems in one's school or neighborhood, and publicizing individual and collective actions, both at school and in non-formal settings in partnership with the community, can be integrated into the curriculum in a more organic way.

Instead of proposing grand structural reforms, *minor pedagogical practices* bet on the power of small everyday transformations, invisible practices often seen as secondary, but which, taken together, can bring about significant changes in the way students and teachers understand and face the everyday challenges involving socio-environmental issues. When recognized and encouraged, these practices can become powerful agents of a more reflective education committed to sustainability.

It is a matter of understanding that every action involving teaching and learning carries a pedagogical meaning: when we teach something to someone, we exercise our own understanding and the strategies we develop to carry out certain activities. Thus, the act of teaching becomes a practice capable of making the other capable as well.

In the context of an educational system increasingly marked by standardization, performance assessments, and external evaluations that do not match learners' realities, insisting on the minor, on what escapes these standardizations, on deviations, on what happens in the cracks, becomes a gesture of resistance.

In this sense, the proposal of a minor practice is justified precisely by its choice to look at what is not immediately visible or valued, and which takes shape in the spaces of subjectivation that emerge in encounters between teacher and student: informal conversations in the corridors, in the schoolyard, or on the way to school, and exercises in visual and photographic production using technologies that the new generations master well.

Moments of sensitive listening, experiences, pains, loves, and so on; small gestures of care for oneself and for others; promoting conversation circles, reading circles, slam, situations that twist the traditional curriculum. Discussions on social issues, pet adoption, anti-racist culture, homophobia, affirmative action quotas, the environment, drugs, and so on; taboo discussions. Narratives of a daily life steeped in doubts and uncertainties that seek shelter in similar narratives.

Therefore, we need to think of an education that affirms teaching and learning processes not conditioned by established curricula or performance indicators, but by what is alive and pulsating in and outside the classroom. Not transcendent but immanent, it seeks to bring education into line with life, with the present and with lived experience, with the reality of each student and their community, recovering their contexts and their relationship with what the school offers. In this sense, it makes it possible to create with what one has, with what one knows, based on events, encounters, words and silences, and small interventions that shift the classroom routine and open fissures in the logic of “covering the curriculum”. We must recognize that we are learning subjects who constitute ourselves in the interstices, in the micro-relations that permeate daily life, including, and especially, everyday school life.

4. Cartography as an environmental research methodology

The methodology, centered on the cartographic approach and on listening to everyday life, sought not only to investigate but also to follow how the statements of graduating students in the 9th grade of lower secondary education and the 3rd year of upper secondary education at the two schools were perceived in the face of the contemporary challenges posed by environmental emergencies. It was based on exchange, dialogue, and

collective construction, with the aim of promoting future pedagogical actions to enhance meaningful learning on the topic.

This text offers a brief account and a partial analysis of one of these meetings with one of the groups of graduating basic education students at one of the schools. It is only an excerpt, and the analysis presented here is partial, but it is significant enough to support initial reflections on students' understanding of the subject.

In all, two meetings were held with students from the two schools. These meetings took place in the second half of 2025 and focused on providing an initial approach to the subject with the students, in order to understand the immanent field of the research and guide future actions. The analysis instrument contained five questions that provided an initial approach.

In the future, with a view to obtaining more reliable data and parameters, we intend to develop another analysis instrument with more elaborate and structured questions. What we can say about this first movement is that it was an investigative experimental activity, since it gave the researcher "[...] the opportunity to follow and interpret the stages of the investigation" (Suart & Marcondes, 2008, p. 2), allowing him to verify and confirm something already known and thus to formulate some hypotheses and test them *a posteriori*.

As mentioned earlier, two meetings were held with students at the two schools. The first meeting at both schools served to present the research and explain the need for parents or guardians to sign the Free and Informed Consent Form (TCLE); once this was done, at the next meeting, the following week, we would hold an informal conversation with those whose parents had signed the form.

The interview responses chosen for discussion in this text were those from the state school, with third-year students. Of two classes with an average of twenty-five students each, the conversation took place with only seven of them. This already gave a brief indication of how low student participation may affect data collection in the future.

Of this small group of students, four were girls and three were boys. Their ages ranged from about fifteen to sixteen. The conversation took place only with this group because they were the only ones who brought the signed forms on the agreed day; other students said their parents had signed, but they did not bring the forms on the agreed day.

The conversation took place in the classroom during a forty-five-minute period provided by the teacher of the literary production class, on a Friday morning. Its guiding thread was the floods that occurred in the state of Rio Grande do Sul in 2024. From this theme, the researcher's central idea was to analyze the students' understandings and perceptions of climate emergencies, as well as to observe how the topic has been addressed by their teachers in the different curricular components of the Natural Sciences and Human Sciences.

Five guiding questions were prepared:

- Do you find questions about the environment and environmental education (EE) in textbooks?
- Does your teacher work on these questions?
- How do you perceive environmental emergencies? Do you understand what this term means?
- How do you think you can help mitigate the problems facing the environment? Can you identify an environmental problem?
- Have you heard about the climate crisis? Do you know what it is?

There was no specific script for the questions. They were asked as the conversation unfolded.

In this sense, one of the questions addressed textbooks and whether they dealt with the environment or environmental issues. Five of the students answered yes, but did not remember in what context. The other two

said they did not remember. As for the subject in which this content was seen, of the five who said they had seen it, three said it was in the “science” textbook with the geography teacher, and the other two said it was in the geography textbook with the same teacher.

As to whether their teacher(s) work on these topics, the same five students said “more or less”, and the other two said no. When I asked what “more or less” meant, their interpretation was that “he touches on the subject, but doesn't go into depth, doesn't hold big discussions”, “he goes a lot by what's in the book”.

When asked how they perceive environmental emergencies and whether they understand what the term means, none of the seven could answer. They do not know what environmental emergencies are. They said they had never heard this “name”. In response, I explained that environmental emergencies concern, for example, studying in a school that is not properly cleaned, where there is a kind of pollution that affects me, visual pollution, the accumulation of garbage on vacant lots, places that should not be full of rubble but where the population, for many reasons, insists on dumping it.

The pollution of rivers, lakes, and the ocean itself. The dirt accumulated in neighborhoods, graffiti on walls, a kind of visual pollution; the neighbor with loud music, noise pollution. These are open wounds close to us, close to where we live, study, or work. These forms of pollution demand an attentive gaze from us, care not to repeat such gestures and attitudes. They demand a gesture of responsibility from us.

Following on from this contribution, I asked them: how do you think you can help mitigate the problems facing the environment? Can you identify an environmental problem? At this point, all seven looked at each other and, calmly, one by one, said that “to avoid polluting you just don't spray graffiti”, “you just don't scribble on the desk”, “you just don't throw paper or packaging on the ground, outside the trash can”, “don't play loud music”. Four of them said that, yes, they can identify environmental problems. They mentioned a vacant lot near the school, about three blocks away.

To close the conversation, the last question was: have you heard about the climate crisis? Do you know what it is? All of them said they did not know what it was, but had heard a lot about it on television during the floods. Once again, I provided some context, this time about this specific topic, and told them that the climate crisis is the reflection of humankind's abusive actions toward the planet, extracting too many natural resources to meet the needs of the industry that produces the goods we overconsume. I told them that it is a reflection of the capitalist system in which we live. The climate crisis is the planet's clearest and harshest response so that human beings understand they must act differently, because otherwise the imbalances will only increase. Too cold. Too hot. Too much rain. One commented: “too muggy”.

After this contextualization, we ended the conversation. I thanked them for the opportunity and told them that whenever they wanted to talk, I would be available.

5. Concluding (for now)

To conclude the discussion in this text, with this provisional contextualization and analysis of the interview with a group of seven students from a state school in the city of Pelotas, in the far south of Rio Grande do Sul, it is possible to say that some paths have been opened in terrain full of obstacles.

We can see from these students' statements that little or almost nothing substantially pedagogical concerning topics related to environmental emergencies is addressed in this school environment. Little pedagogical work on understanding Environmental Education (EE) is being reported, and it is timely to establish appropriate criteria, specific themes, and substantial pedagogical proposals to develop quality, sensitive, and critical learning that enables students to deal with the subject. It means thinking about strengthening reflective educational practices suited to local emergencies: their school, their neighborhood, their city.

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