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Freirean Perspectives on Environmental Education Amidst the Climate Emergency

Perspectivas Freireanas sobre Educação Ambiental em meio à Emergência Climática

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Abstract: The Intergovernmental Panel on Climate Change (IPCC) warns that climate-related risks will intensify, necessitating urgent climate actions. Despite the global risk and urgency, responses to the climate emergency, even when acknowledged, often end up reinforcing social discrimination, affirming that the concept of risk is associated with social inequality. It is argued that environmental education can confront these challenges, counter climate denialism, promote awareness, and empower communities to actively engage in sustainable practices through the Freirean approach. This paper presents a theoretical framework for Freirean Environmental Education in the Climate Emergency. Paulo Freire's dialogical-problematizing approach is linked to the concept of vulnerability, ensuring that Freirean environmental education leads to transformative actions. The entire conceptual and methodological structure is described through a flowchart. Vulnerability to the climate emergency and actions to address it should be developed at the local level, allowing limit-situations and the participatory or exclusionary process can be codified for educational purposes. A Canadian and a Brazilian case study are briefly discussed in light of this educational proposal.
Key Words: Paulo Freire. Climate justice. Vulnerability. Canada. Brazil.

Resumo: O Painel Intergovernamental sobre Alterações Climáticas (IPCC) alerta que os riscos relacionados com o clima irão intensificar-se, sendo necessárias ações climáticas urgentes. Apesar do risco e da urgência globais, as respostas à emergência climática, mesmo quando reconhecidas, acabam muitas vezes por reforçar a discriminação social, confirmando que o conceito de risco está associado à desigualdade social. Argumenta-se que a educação ambiental pode enfrentar estes desafios, combater a negação climática, promover a sensibilização e capacitar as comunidades para se envolverem ativamente em práticas sustentáveis através da abordagem freireana. Este artigo apresenta um referencial teórico para a Educação Ambiental Freireana em Emergência Climática. A abordagem dialógico-problematizadora de Paulo Freire é articulada ao conceito de vulnerabilidade, para que a educação ambiental freireana conduza a ações transformadoras. A estrutura conceitual e metodológica é descrita através de um fluxograma. A vulnerabilidade à emergência climática e as ações para enfrentá-la devem ser desenvolvidas em nível local, permitindo que situações-limite e o processo

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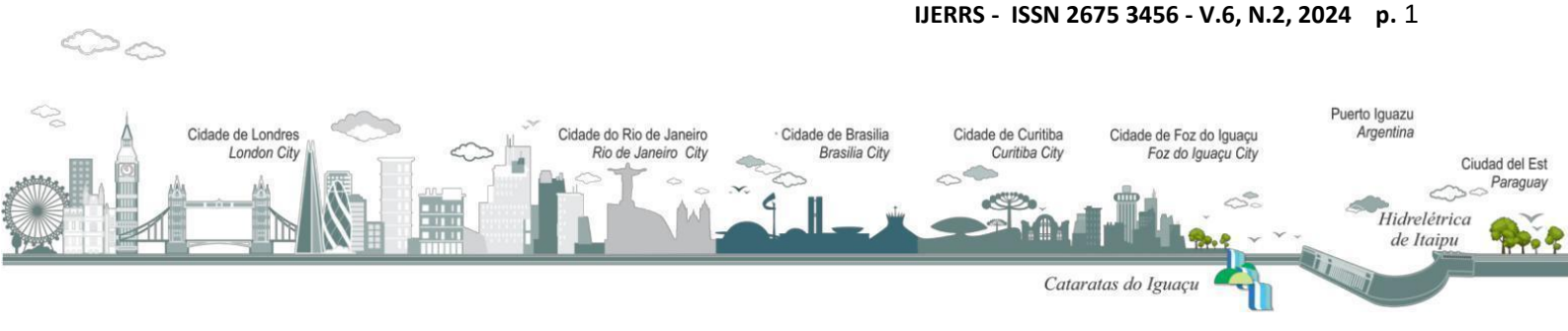

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participativo ou excludente possam ser didaticamente codificados. Um estudo de caso canadense e um brasileiro são brevemente discutidos à luz desta proposta educacional.
Palavras Chave: Paulo Freire. Justiça climática. Vulnerabilidade. Canadá. Brasil.

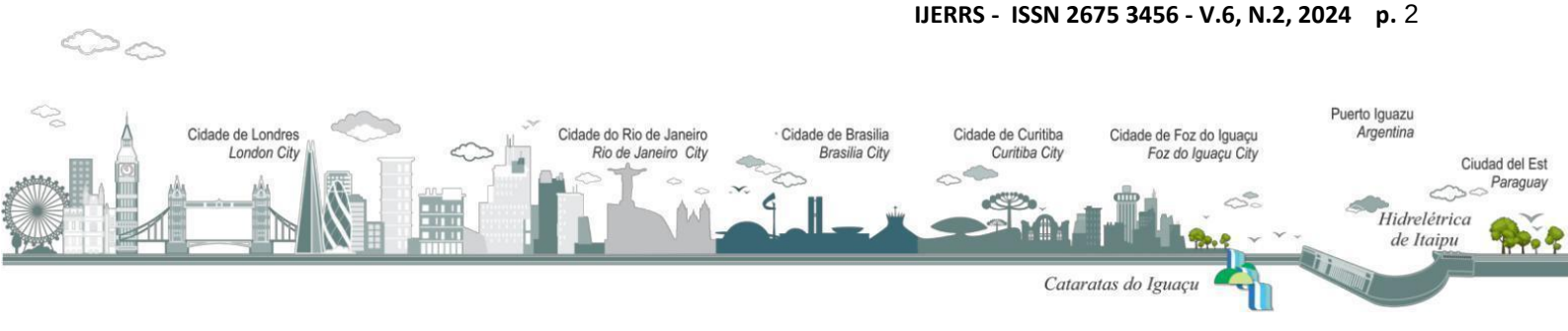
INTRODUCTION

The Intergovernmental Panel on Climate Change (IPCC)'s AR6 Climate Change 2023 Synthesis Report (IPCC, 2023) warns that future warming will affect the major climate system components and many climate-related risks are expected to be higher than in previous assessments. According to this new global assessment, regional changes in mean climate and extremes will become more widespread and pronounced, with an increase in the severity of impacts across natural and human systems. This picture leads to the call for urgent climate actions, corresponding to near-term mitigation and adaptation actions, which has been called "climate emergency". This term "climate emergency" was coined to reinforce this new phase in climate change requesting quick response and incisive actions (McHugh *et al*., 2021).

Despite the global risk and the urgency, it is time to remember Ulrich Beck's analysis in his World Risk Society: risk is a social inequality associated definition and can be handled and defined (or even denied), by those who can benefit themselves from the reflexivity of risk (Beck, 2006). The amplitude of his analysis encompasses different risk modalities, not only climate emergency, and it was already applied to covid-19 society's vulnerability to pandemic (Saito *et al.,* 2020). Ulrich Beck (2009) made an additional effort to clarify world risk society and the associated social inequality:

> In questions of social inequality in the world risk society, the issue is not how the risks are allocated but, rather, what risks actually are or, more precisely, what they are for whom – opportunities to be seized or threats imposed by others – but, above all, who has the power to divert the hazardousness of the risks they incur onto others. This is the structural conflict built into the communicative logic of risk. (Beck, 2009, p. 9).

It can be said that the risk analysis is entwined with social inequality, and the recognition or not of the risk can be a strategy to maintain this social inequality. Beck himself addressed



that denialism and its emphatic repudiation of the existence of world climate change risk is a way to increase the danger of climate catastrophe (Beck, 2006).

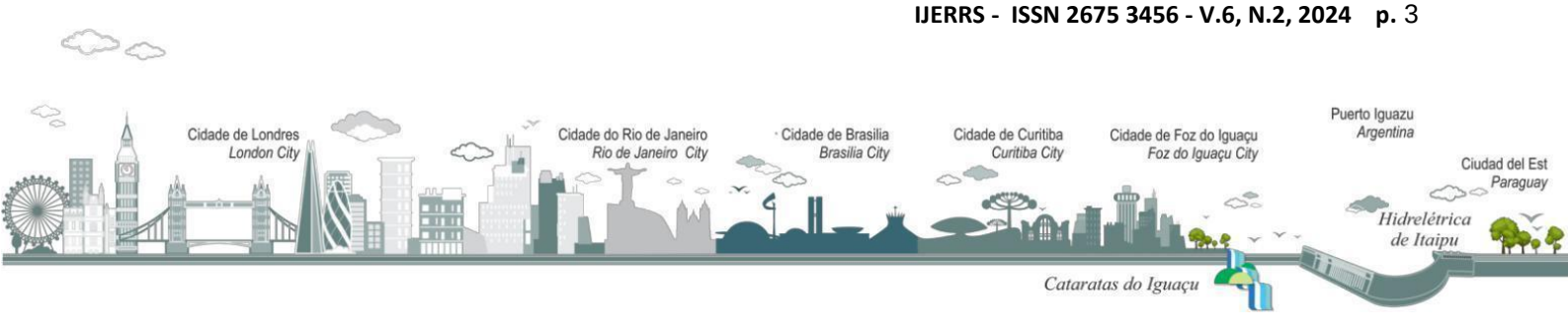
Nevertheless, the association between climate emergency and social inequality goes beyond the necessity to combat denialism. Even when a climate emergency is recognized, many elements of the response to it, in means of public policies, programs and infrastructures are also reinforcing social discrimination, segregation, and displacement and promoting the so-called climate apartheid (Kashman, 2021; Rice *et al*., 2022), as an expression of a Necropolitics (Mbembe, 2019).

In light of these challenges, environmental education becomes paramount, serving as a tool to counteract denialism, foster awareness, and empower communities to actively engage in sustainable practices. By adopting a Freirean approach, which emphasizes critical thinking, dialogue, and participatory learning, environmental education can contribute to dismantling the barriers that perpetuate social inequality and enable individuals to become agents of positive change (Freire, 1970).

Considering this context, and the fact that risk society is also associated with the communicative logic of risk, this paper seeks to present a comprehensive framework for environmental education that aligns with Freire's principles and addresses the complex interplay of climate change, social inequality, and denialism. This framework encompasses the baseline context and premises, Paulo Freire's theoretical ground and how it can be applied to Environmental education capable of facing climate emergency challenges, and other associated theories and concepts.

INITIAL ASSUMPTIONS

The climate emergency (or climate crisis) has been considered a suitable "theme of an epoch" under a Freirean approach, arguing that this climate crisis due to climate change is currently a threat to life itself at a planetary level, and thus, corresponding to a situation that limits human life (Salinas *et al*., 2023). Unfortunately, it has to be said that we cannot consider the climate crisis, *per se*, a Freirean generative theme due to the thematic universe, and solely



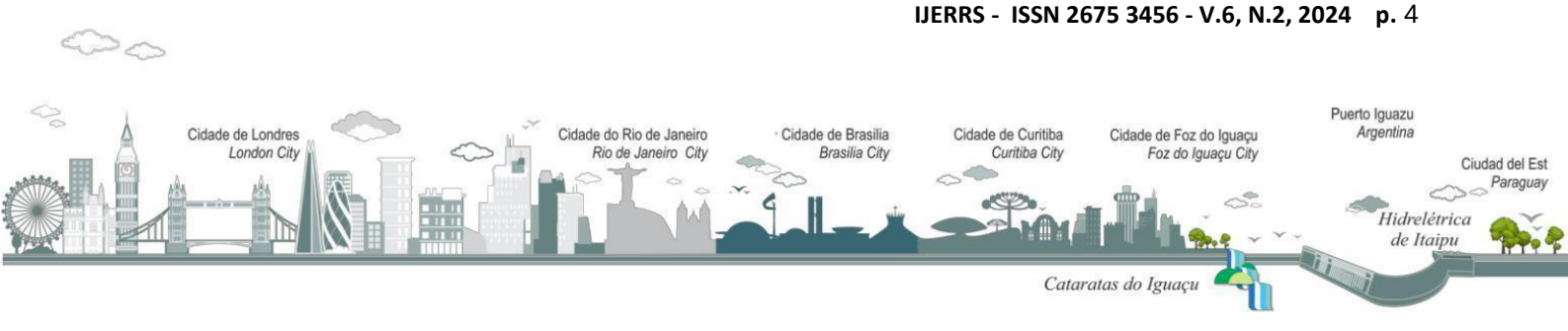
justified by a global threat to life. The themes, according to Freire (1983, p. 92) “both contain and are contained in limit-situations", leading to a requirement of meaningful thematic.

Climate change is too vague and too abstract an issue to be perceived as a limit-situation that can call upon a liberation-act. The limit-situation can also be due not simplistically to the climate change, but to the land use changes that can be aggravated by climate change, and the very concrete local level situation should be the starting point to investigate. Additionally, climate-related mitigation and adaptation measures, can also promote land use changes that may affect communities and arise socio environmental conflicts (Froese & Schilling, 2019). Thus, it is necessary to clarify why we choose climate emergency as a generative theme and its relationship with limit-situations and what they are. Moreover, it is imperative to acknowledge that climate change and its resultant emergencies disproportionately affect individuals. The exigency for emancipatory measures arises from the uneven impact of the climate emergency, embodying the authentic essence of the Pedagogy of the Oppressed (Freire, 1983).

This debate is not new, and it was done in the years of 1990's alerting to the risk of Freirean supporters being trapped into neoliberal thoughts, while looking for generative themes by promoting friendly conversation with students in the classroom or by electing hot contemporary issues like climate change. The social inequality and the social struggles by community's organizations should be the mainstreamed in these thematic investigations (Saito & Santiago, 1998; Saito, 2001; Saito *et al.*, 2014), and these local history and fights should be the starting point for the radical form of critical pedagogy.

Thus, in the climate change and emergency context, a Freirean approach should consider the idea of a climate apartheid: the resultant set of discrimination, segregation, and violence in consequence of the material effects of climate change and also the responses to it (Rice *et al.,* 2022).

Put in this way, the center of the educational focus will be the inequality resulting from climate emergency, and not the climate emergency or climate change itself. It is worthy to bring up Paulo Freire's alert about the fact that people will take contradictory positions about the epochal themes, because some of them need working to maintain the social unbalance, and others will be committed to change them. Freire argues that in the midst of the confrontation



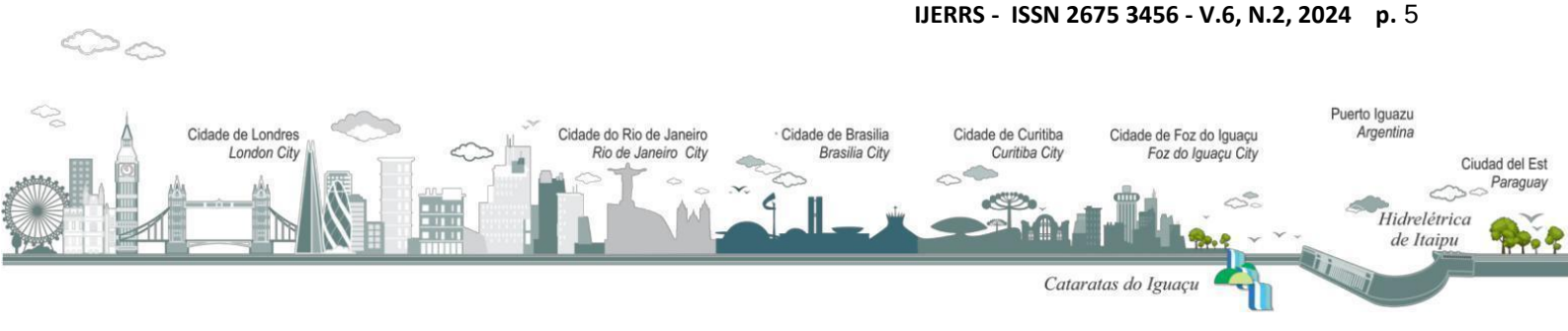
(antagonistic positions) arises a tendency for the themes and for reality itself to be mythicized. This reasoning fits the contemporary irruption of climate denialism, establishing irrationality and sectarianism in our society. Freire (1983, p. 92) says that this sectarianism can "drain the themes of their deeper significance" and so we can lose focus. Maybe in this sense, there could be some convergence with the opinion by Bretter & Schulz (2023) that "focusing on 'climate change denial' is counterproductive", if we consider this focus some type of "silver bullet" against denialism and ignorance. Due to its complexity, this combat should include a combination of socio-emotional learning, social justice, and techniques for addressing misinformation (Ranney & Velautham, 2021). Critical pedagogy cannot ignore that climate denial is much more than simple ignorance and lack of information, it can be considered an ideological denialism (Petersen *et al*., 2019).

In light of the climate apartheid, social inequality, and the need to confront ideological denialism, an environmental education guided by a Freirean approach will involve engaging dialogues. These discussions will address the acknowledgment of the reality of the climate emergency, its disproportionate impact on socially marginalized groups, and emphasize how a comprehensive understanding can contribute to fostering a more inclusive society. This aligns with the principle of "No one must be left behind" (UNGA, 2015).

THE FREIREAN THEORETICAL GROUND

Very recently, the year of 2021 has marked the centenary of Paulo Freire's birth (1921-1997), despite the restrictive political environment in his country of birth. His main commitment was with the struggle for emancipation of those who have been marginalized. According to his own words: "I consider the fundamental theme of our epoch to be that of domination — which implies its opposite, the theme of liberation, as the objective to be achieved" (Freire, 1983, p.93).

We have already argued that the climate crisis, *per se*, cannot be considered a Freirean generative theme isolatedly, and it may demand deeper clarification here. Morrow (2019) presented a theoretical reconstruction of Freire's methodology, and his work can be useful for



this clarification. According to him, there would be two dimensions for Freirean “critical thinking”: the first one would correspond to what he called *formal-dialogical critical thinking*, focused on a general reasoning capacity that could be reconstructed relatively independently of particular assumptions about social reality; and the second one was called by him the *sociocritical thinking*, which would involve the application of a theory of society to epochal and local diagnosis. But one could not move forward without the other, because the process of conscientization requires the integration of these two dimensions (Morrow, 2019).

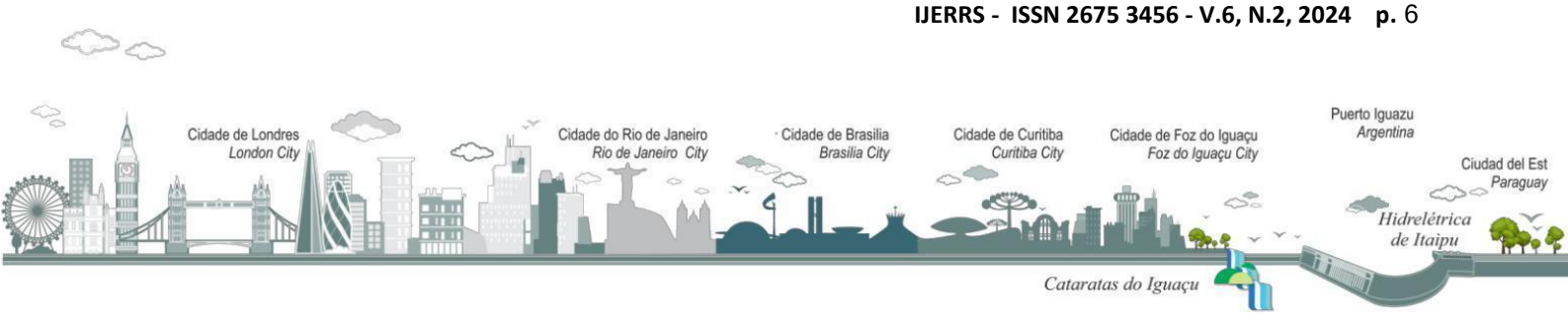
When people propose climate change or climate emergency and crisis abstractly as a generative theme, they are dissociating these two dimensions.

How to reconstruct the integration of these two dimensions?

To avoid the potential entanglement in neoliberal ideologies and to prevent the separation of formal-dialogical critical thinking from sociocritical thinking, prioritizing thematic investigation is a crucial process. Emphasizing the concept of dialogue, this approach aims to explore present, existential, and concrete situations that mirror the aspirations of the people, as advocated by Freire (1983). Community organizations systematically carry out this process through the lens of their historical struggles, as documented by Saito & Santiago (1998).

The next step should be the problematization of the selected limit-situations by a didactic procedure of codification, so that the apprehension of the complex of contradictions will be organized to favor the development of critical thinking. The codification is part of the problem-posing process attempting to "re-totalize the disjoined theme in the representation of existential situations" (Freire, 1983, p. 114). According to Freire, "codifications are not slogans; they are cognizable objects, challenges towards which the critical reflection of the decoders should be directed" (Freire, 1983, p.106).

Once the existential limit-situation is codified, the decoding process becomes the opportunity for people to apprehend its codified implicit theme (Freire, 1983, p. 114). It is this reasoning in the decoding process that leads people to understand their limit-situation. Freire believed that people cannot truly know their reality, just apprehending it in fragments. "To truly know it, they would have to reverse their starting point: they would need to have a total vision of the context in order subsequently to separate and isolate its constituent elements and by means of this analysis achieve a clearer perception of the whole" (Freire, 1983, p.95). It is a

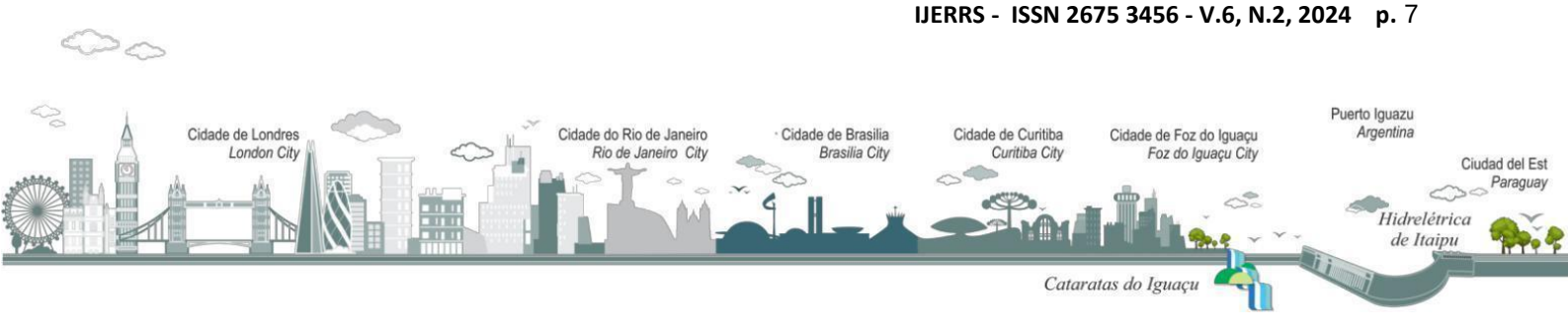


dialectical process of integrating the parts and the whole, performing an objective distanciation from their limit-situation inquiry. By adopting this approach, individuals start recognizing their past behavior and reactions within limit-situations, leading to a "perception of their previous perception" (Freire, 1983, p.108). This marks the attainment of awareness and an expansion of their perceptual horizons. The awareness empowers individuals to address limit-situations through proactive actions to overcome the limit-situations, referred to as "limit-acts." As reality is transformed and these situations are surpassed, new challenges emerge, prompting the need for fresh limit-acts (Freire, 1983, p. 89-90).

Based on these descriptions of Paulo Freire's nuclei of theory, Saito *et al.* (2014) indicated the chain of loving - dialogue - thematic investigation - problematization - limit-acts as the backbone of his theory and they organized a flowchart of this backbone chain to help its understanding. Loving, Humility, Solidarity and Dialogue are strongly connected in Freire's theory. Solidarity is born only when people dispose themselves to it by their humble and authentic loving for the world and for people. Dialogue can then be authentic in this condition, because he considers that "Dialogue is the loving encounter of people, who, mediated by the world, 'proclaim' that world" (Freire, 2005, p. 104). Love would be the deep and solidary commitment to the cause of the freedom of those oppressed.

The role of knowledge for Freire is that reflection leads to action. According to him, "when the situation calls for action, that action will constitute an authentic praxis only if its consequences become the object of critical reflection. In this sense, the praxis is the new *raison d'etre* of the oppressed" (1983, p. 52-53), because "in dialectical thought, world and action are intimately interdependent" (Freire, 1983, p. 38). And the access to this knowledge should be seen "not in terms of explaining to, but rather dialoguing with the people about their actions", representing the affirmation of the necessity of the critical intervention of the people themselves in reality through the praxis (Freire, 1983, p. 38-39).

It is through praxis that people can move forward their empowerment, and thus, live emancipatory practices. Empowerment and Paulo Freire has been addressed as entwined by Wallerstein & Bernstein (1988), Saito (2001) and De Lissovoy (2018). Empowerment can be understood as the social, psychological, political and organizational strength of a community, while they are referred to their common interests, their livelihood, and they practice a solidarity



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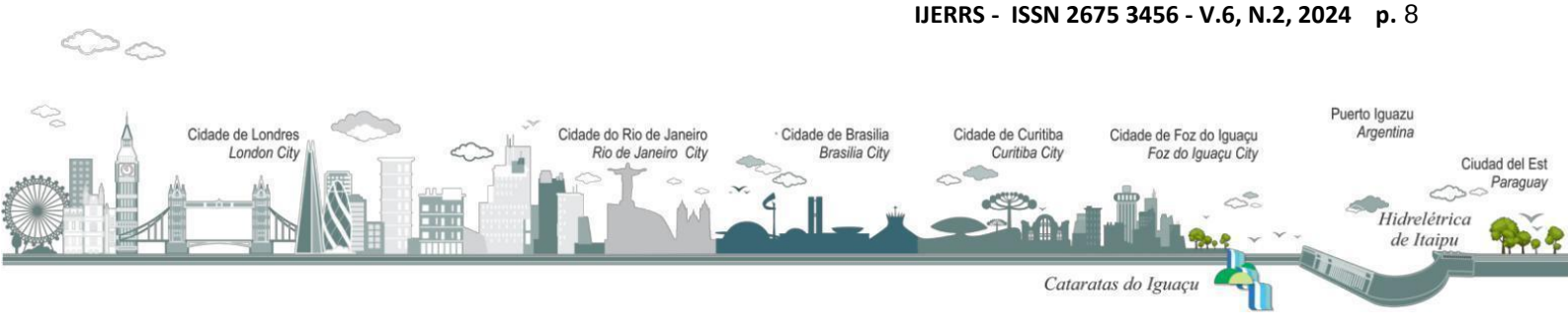
and collaborative action to transform local reality and develop it (Friedmann, 1992). In this sense, empowerment will correspond to a politics of emancipation enabling the oppressed to overcome social inequalities and to assert a better quality of life. The connection between Empowerment and Paulo Freire's Pedagogy of the Oppressed is due to the fact that the Freire proposes to work with people aiming to make them capable to understand their existential limit-situations by critically assessing the social and historical origins of those limit-situations, so that they can develop collective strategies to overcome these limit-situation through limit-acts.

FREIREAN ENVIRONMENTAL EDUCATION AND THE CLIMATE EMERGENCY

First of all, a definition of Environmental Education is needed to avoid fashionism that could lead to proposals of new terms such as Education for Sustainable Development or Climate Change Education. The latter is only an issue or label which has been highlighted and has gained a contemporary visible status, such as biodiversity, and thus it is not adequate to talk about biodiversity education as much as climate change education (Saito, 2013). Education for Sustainable Development as a term that emerged to replace Environmental Education due to its broader scope is not a solid argument and lacks a strong foundation. The idea that Education for Sustainable Development would include social and economic issues, or preparing responsible citizenship decisions concerning the environment in opposition to Environmental Education (Hungerford, 2010), which would be focusing on conservation of species, is a complete misinterpretation of what is Environmental Education (Saito, 2013).

It is necessary to return to the original documents of the early Environmental Education conferences to realize the complexity and the purpose of Environmental Education. According to The Intergovernmental Conference on Environmental Education, held in Tbilisi in 1977:

> Environmental Education, properly understood, should constitute a comprehensive lifelong education, one responsive to changes in a rapidly changing world. It should prepare the individual for life through an understanding of the major problems of the contemporary world, and the provision of skills and attributes needed to play a productive role towards improving life and protecting the environment with due regard given to ethical



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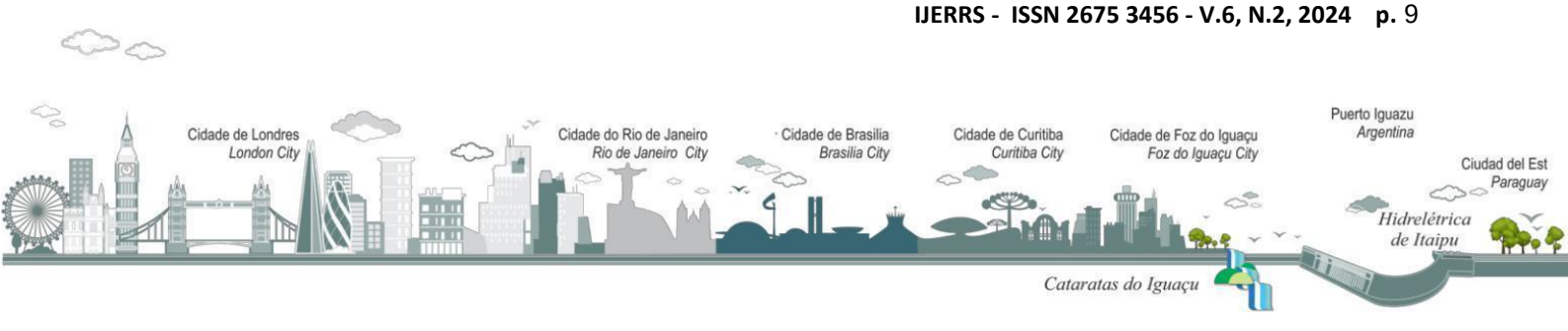
> values. By adopting a holistic approach, rooted in a broad interdisciplinary base, it recreates an overall perspective which acknowledges the fact that natural environment and man-made environment are profoundly interdependent. It helps reveal the enduring continuity which links the acts of today to the consequences for tomorrow. It demonstrates the interdependencies among national communities and the need for solidarity among all mankind (Unesco, 1978, p. 24).

The same conference document indicates a much stronger connection between Environmental Education and a Freirean Dialogical problem-posing pedagogy when it is asserted that "such an education implied an interdisciplinary, problem-solving approach" (Unesco, 1978, p.7). This can justify the existence of a research line of "Freirean Environmental Education" in Brazil (Pedrini & Souza e Silva, 2023).

Considering this, a theoretical structure of Freirean Environmental Education in Climate Emergency is presented in Figure 1. This structure presents a solution for the integration of the two dimensions of Freirean “critical thinking” organized by Morrow (2019) in the context of an Environmental Education in Climate Emergency. The *formal-dialogical critical thinking* would correspond to the epochal theme, focused on a general reasoning capacity that could be reconstructed relatively independently of particular assumptions about social reality, which in this case are related to the climate change concept and the land use change and the associated impact to climate change leading to what we call today the climate emergency. The *sociocritical thinking*, which corresponds to the processes involving the application of a theory of society to epochal and local diagnosis, would be related to all those existential limit-situations related to the Climate Emergency, such as the floods or drought due to the rainfall regime disturbance, forest fires or snow melts affecting the socially disadvantaged people – the concrete expression of the climate injustice.

Existential limit-situations are very important for Environmental Education because:

> environmental education should bring about a closer link between educational processes and real life, building its activities around the environmental problems that are faced by particular communities and focusing analysis on these by means of an interdisciplinary, comprehensive approach which will permit a proper understanding of environmental problems (Unesco, 1978,



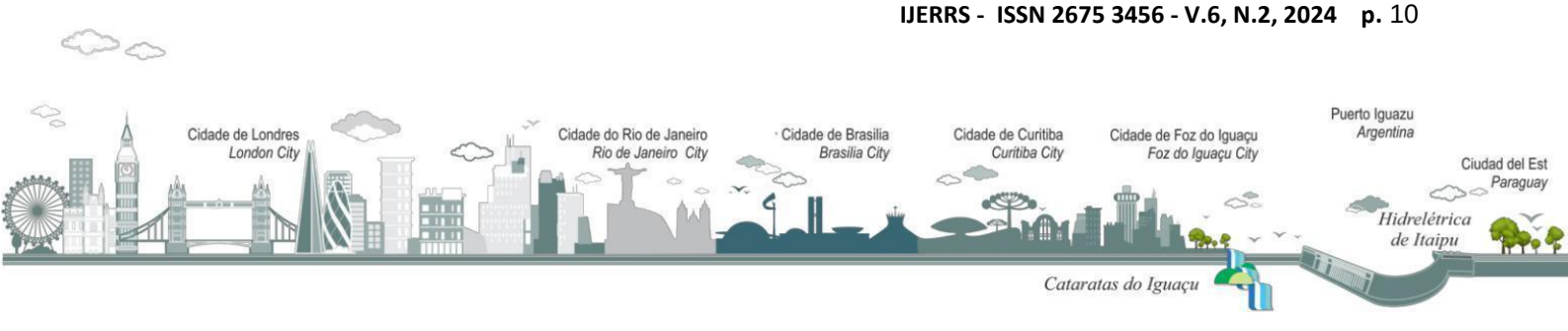
p.25-26).

The integration of these two dimensions (formal-dialogical critical thinking and sociocritical thinking) is done by the concept of vulnerability, which corresponds to the degree to which a system, or part of it, is likely to suffer harm due to exposure to a hazard, disturbance, or stress (Turner II *et al.,* 2003). Vulnerability will then be recognized as a generative theme, because it can generate other themes to dialogue about, based on the fact that the concept of vulnerability itself is a resultant of three other concepts exposure, sensitivity and capacity of response, This, in turn, can be further explored within other themes to gain a more comprehensive understanding of climate injustice. Exposure refers to the degree and duration at which a socio-environmental system comes into contact with a certain disturbance; Sensitivity corresponds to the degree to which this socio-environmental system is impacted by the disturbance; and Capacity of response would be the ability of the socio-environmental system to deal with the consequences of the impact and the resulting changes, maybe by adjustment to the disturbance or moderating the potential damage (Adger, 2006; Gallopín, 2006).

This same vulnerability framework was applied for the case of covid-19 pandemic outbreak, and exposure, sensitivity and capacity of response of societies were modeled for three countries (Brazil, France and Poland), based on the assessment of the influence of other concepts such as social inequalities, the weakened Welfare State or the level of Democracy, among others (Saito *et al.,* 2020). Thus, vulnerability is a generative theme not only because it can unfold dialogues on exposure, sensitivity and capacity of response, but also because these articulated concepts can, in turn, stimulate further dialogues around additional ideas and themes. This correspondence of vulnerability concept with generative theme can be seen in Figure 1, integrating formal-dialogical critical thinking and sociocritical thinking.

Additionally, vulnerability is a perfect concept to assess disaster risk and the socially unequal risk, as Beck (2006) argued, and Climate Emergency is a disaster risk too. Vulnerability is also considered a key concept for the pathways in research on climate change and conflict (Froese & Schilling, 2019).

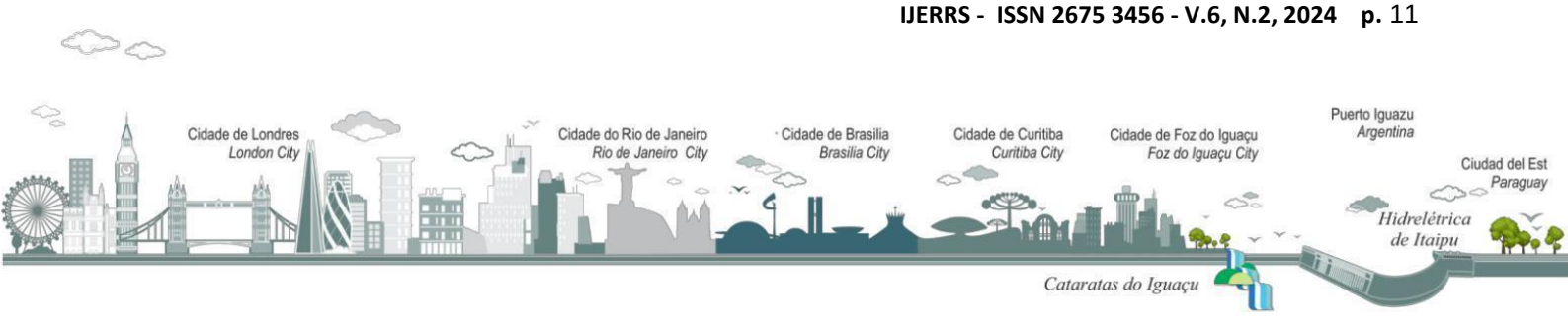
A very recent study published informed that more than 48 thousand people in Brazil



(from 2000-2018) died because of the exposure to heat waves, mostly affecting low-educational level people, blacks and browns, older adults, and females. The study considered the extreme heat events as neglected disaster and it confirmed the unequal social vulnerability to climate emergency (Monteiro dos Santos *et al.,* 2024).

In British Columbia, Canada, a spatial scanning study on indicators for vulnerability to climate change-related health hazards addressed low education as a common variable influencing adaptive capacities in response to a hazard's impact (extreme heat, flooding, and wildfire smoke). Minority/Indigenous status, housing not suitable and income inequality were also indicated for at least one of these hazards after Principal Component Analysis (Yu *et al.,* 2021).

Both studies (Monteiro dos Santos *et al*., 2024, for Brazil, and Yu *et al.,* 2021, for Canada) explore the vulnerability concept and its components, demonstrating that this concept is the generative theme from which new themes can be unfolded, starting from vulnerability's components exposure, sensitivity and capacity of response. Thus, Climate Emergency is a disaster risk, and the socially influenced vulnerability to it and its impacts can manifest themselves in local concrete, existential limit-situation (Figure 1).



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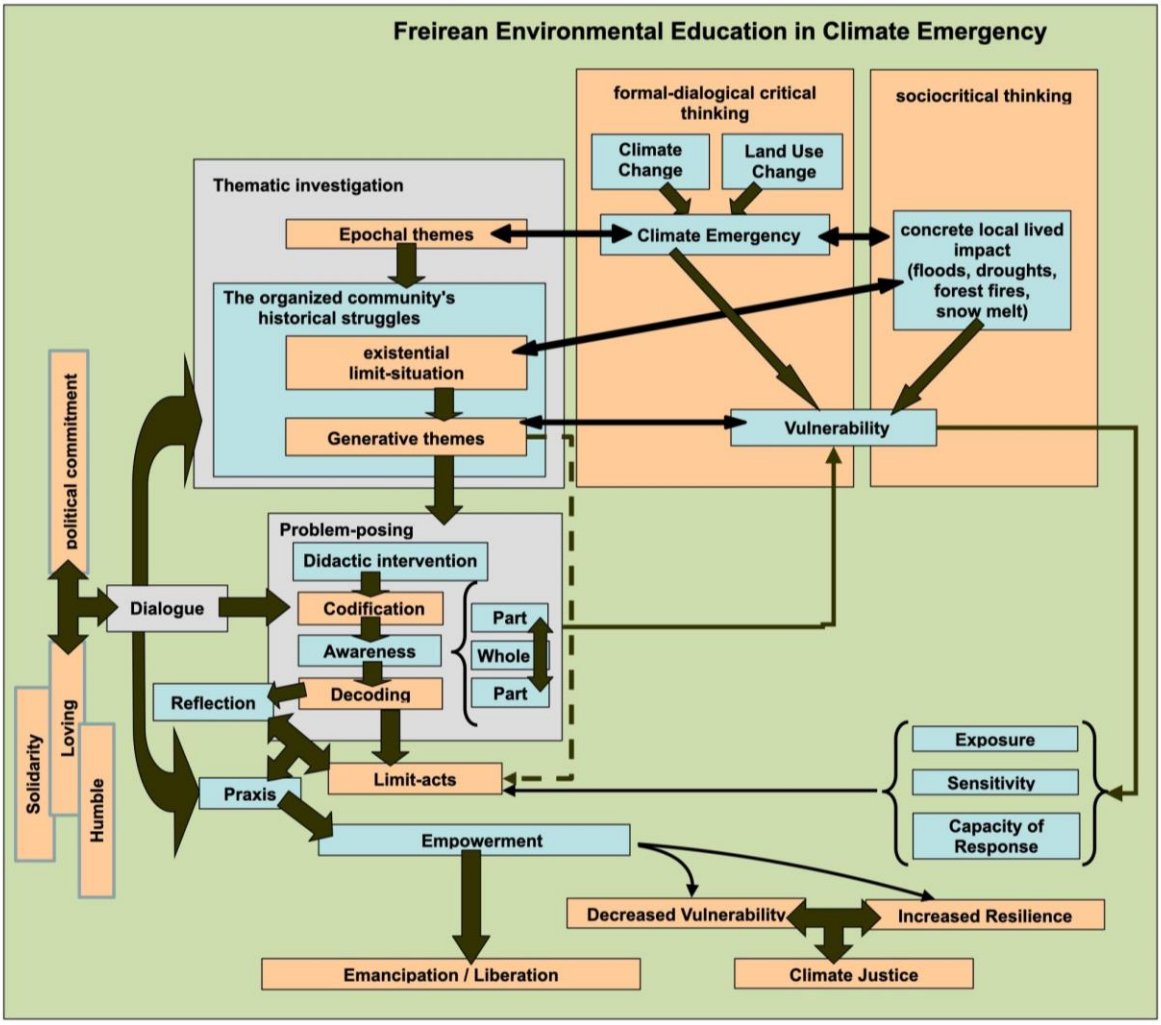


Figure 1 – The theoretical structure of a Freirean Environmental Education in Climate Emergency. Modified from Saito *et al.* (2014) in their theoretical framework of Paulo Freire's dialogical problem posing educational steps. Included the integration to the Environmental Education in Climate Emergency.

Source: the authors.

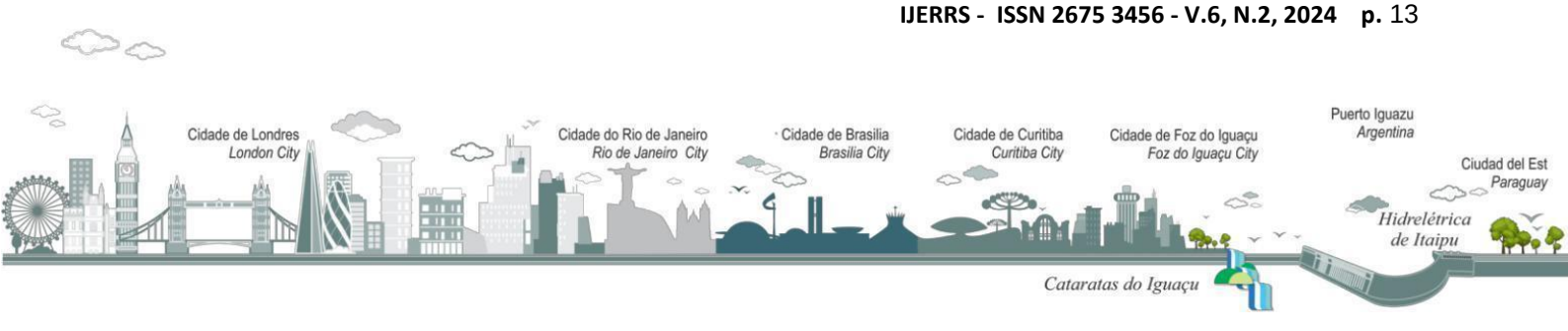
Thus, we can address the importance of Freire's idea, by his own words: "Problem-posing dialogue, in addition to the various reasons already mentioned which make it indispensable, diminishes the difference between the sense of an expression as given by a

technician, and the grasping of this expression by the peasants in terms of its meaning for them (Freire, 2005, p. 125).

LIMIT-SITUATIONS RELATED TO THE CLIMATE EMERGENCY

Actions facing a climate emergency don't necessarily mean actions leading to more climate justice. Significant trade-offs between climate action and climate justice exist: on the one hand, some types of climate responses can produce new climate injustices, and on the other hand, the critical consciousness of the sources and the effects of climate injustices does not easily lead into the specific actions needed to promote climate justice in practice (Kashwan, 2021).

Those specific actions needed to be developed at a lower level than usual national agenda and plans: local level where the limit-situations are clearly seen and felt by people and where the participatory or exclusionary process can be codified together with the vulnerability components. Campello Torres *et al.* (2021) proposed some guiding questions for the analysis of plans which can be converted into issues to be considered during the dialogical problem-posing process, both for the codification and decoding process: a) the existence of municipal climate and adaptation policy and the origin of the first plan; b) the existence of traditional populations living in the municipality, where do they live and the percentage of the population living in subnormal agglomerates in the municipality and their location; c) if the local plan interplays with the higher level plans; d) a verification if the words "justice", "rights", "poverty", "inequality", "vulnerability", "vulnerable", "traditional populations" appear in the plan and the way these words are addressed and conceptualized; e) the existence of a previous diagnosis and scenery modeling of the main effects of climate change that these territories are impacted by; f) the type of responses are contained in the plan, and i f these responses address a change in the *status quo* in city planning and promote environmental justice; g) what type of participatory process is previewed and if these participatory processes promote social inclusion, knowledge understanding and empower the disadvantaged people and traditional communities.



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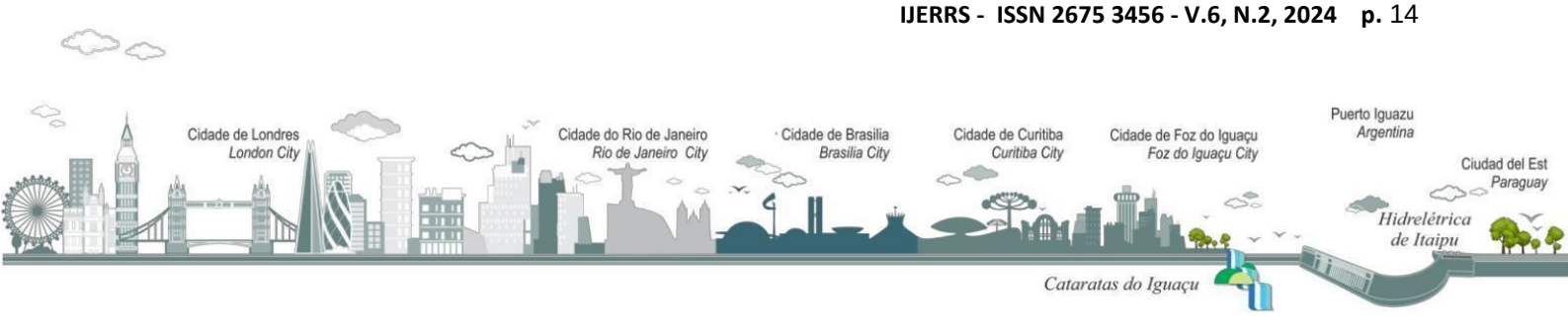
This is because the pathway to climate justice (and here to freirean liberation-act) can have three dimensions that should be analyzed in the decoding process: a) the Distributional Effects of Climate Change (referring to the way costs and burdens of climate change and the responses to climate change are distributed within societal groups); b) Procedural Rights (referring to opportunities to participate in the planning and implementing climate emergency responses by the groups most affected by climate change); c) “Recognitional” Justice (referring to the level of recognition of people from all social groups as legitimate actors with the right to have their problems, interests and priorities guiding the design and implementation of policies and programs to face climate emergencies) (Kashwan, 2021). These can be the unfolding process of generative themes.

Building on this, Canadian and Brazilian case studies are briefly discussed.

Currently, in British Columbia-Canada, the management of flood hazards is regarded as a shared responsibility across various government levels. The federal government assumes responsibility for First Nation Reserves, while the provincial government oversees Crown lands, and local governments play a significant role. The Federal government contributes funding, shares infrastructure, and assists with flood response and recovery costs through the Disaster Financial Assistance program. The province provides enabling legislation in the form of guidelines and technical studies, along with cost-sharing and other funding programs.

The majority of the local implementation of flood-related policies, including land use planning and zoning, the construction of flood protection structures, and emergency planning and response to flood-related events, falls under the purview of local governments. In the current legislative framework in British Columbia, local governments regulate land use through an Approving Officer, typically a municipal planner or engineer appointed by the council. This officer, operating independently due to statutory powers, can refuse subdivision approval if deemed against the public interest. Additionally, provincial approving officers and provincial land officers oversee land regulation for Crown lands (Yumagulova, 2020).

The current flood management regime in BC highlights a complicated and fragmented governance system characterized by a certain degree of path-dependency and a continued reliance on structural protection. This complexity stems from the historical co-evolution of development and risk, a diminishing level of oversight and support (both technically and

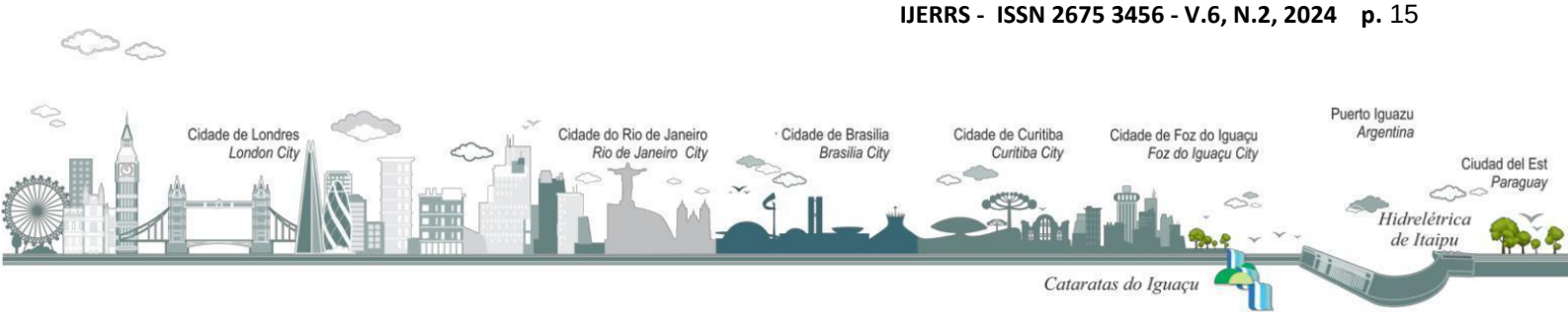


financially) from higher levels of government, and a growing array of municipal responses.

The inequitable distribution of flood risk and vulnerability in the region is evident, with a considerable number of First Nations communities situated in floodplains devoid of protective dikes (Ministry of Forests, 2012b). This spatial disparity can be partially attributed to the historical significance of watercourse access for activities such as fishing, hunting, and transportation. More significantly, however, this socio-spatial inequity results from the colonial policies imposed by Canadian governments, which compelled the establishment of reserves often on lands considered substandard for colonial settlements. These reserves, governed by the Squamish Nation, Musqueam Nation, Tsleil-Waututh First Nation, Tsawwassen First Nation, Semiahmoo Indian Band, Kwikwetlem First Nation, Katzie First Nation, and Kwantlen First Nation, operate independently of municipal and Regional District governance. Notably, the Qayqayt First Nation and Hwlitsum First Nation do not possess a land base. The lands of Musqueam, Tsawwassen, Semiahmoo, Tsleil Waututh, and Squamish First Nations are predominantly close to sea level (Ministry of Forests, 2012a).

The current flood management regime in British Columbia underscores a complex and fragmented governance system with historical roots. This complexity is shaped by the co-evolution of development and risk, a diminishing level of oversight and support from higher levels of government, and an array of municipal responses. However, this regime reveals an evident disparity in flood risk and vulnerability distribution, particularly impacting numerous First Nations communities situated in floodplains lacking protective infrastructure, as outlined in the Fraser Freshet Masterplan (Yumagulova, 2020).

Moreover, the inequitable distribution of flood risk is deeply rooted in colonial policies imposed by the Canadian government, which compelled the establishment of reserves on lands often deemed substandard for colonial settlements. This socio-spatial inequity accentuates the precarious situation of many First Nations in the region, as they find themselves disproportionately exposed to flood risks due to historical and systemic factors. Addressing climate justice in the context of flood management requires a comprehensive understanding of these historical injustices and a commitment to rectifying the disparities faced by First Nations communities. The intersectionality of environmental, social, and historical factors calls for an innovative approach to climate justice that acknowledges and rectifies the



imbalances in vulnerability and resilience among diverse communities.

In the Brazilian case, what is remarkable in recent times is the official recognition in 2023 that now there is a new climate type in the country: for the first time, there is an arid zone, equal or less than 0.2 aridity index. This arid zone has an extension of 5,763 km^2 in the north portion of the Bahia state, Brazilian northeast region (Tomasella *et al*., 2023). This area encompasses the municipalities of Abaré, Chorrochó, Macururé, and portions of the municipalities of Curaçá, Juazeiro and Rodelas. Rodelas is the municipality where the Tuxá indigenous group live.

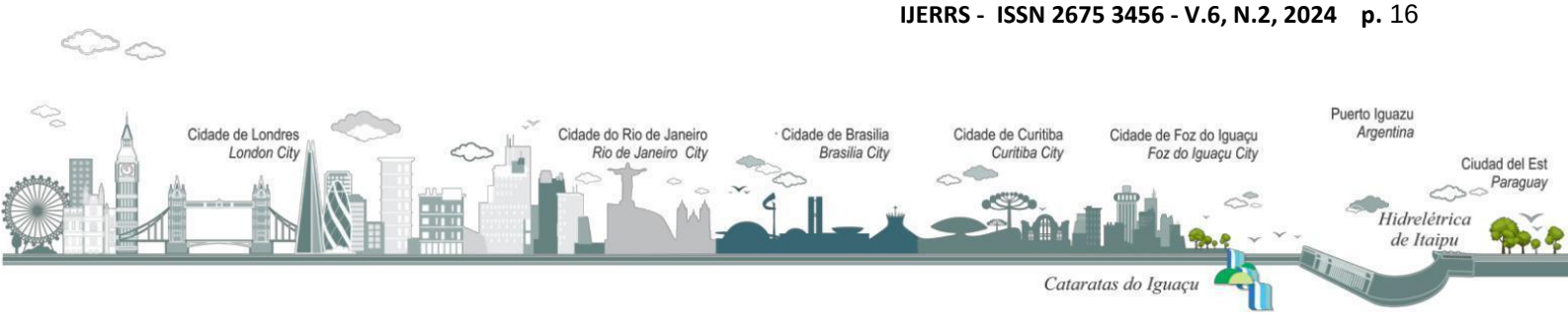
The Tuxá are traditionally agricultural and fishing people, however, these activities are less being carried out by them. They are considered a deterritorialized population which lost their original lands in the recent past due to the submersion of the islands in the São Francisco River they occupied just when the Itaparica hydroelectric plant was built in 1988. They have difficulties to continue practicing their traditional activities because of the lack of territory and the abrupt decrease of fish in the river (Dávalos *et al.,* 2020).

The decrease of fish can be attributed to both the water transfer project, the decrease in water due to the land use change in rivers upstream and the climate change. The decrease in precipitation and increase of temperatures leads to lower level of water in the river, and difficulties to practice small-scale agriculture. These changes in climate conditions are well noticed by the Tuxá.

To face the climate emergency, the Tuxá are making efforts by themselves to improve their own capacity of response, aiming to strengthen their institutional networking for project implementation. They consider this networking capability very important to develop projects seeking to improve income, access to water, and infrastructure for combating drought, such as the construction of dams and the drilling of wells. They got the acquisition of seeds and animals for agriculture and livestock, and means for strengthening of indigenous fish farming, among others (Dávalos & Rodrigues-Filho, 2022).

Considering that it was identified a tendency for aridity to increase throughout the country, except in the southern region, this region and the Tuxá people will suffer an aggravation of the present climate emergency (Tomasella *et al.,* 2023).

How can a Freirean perspective frame Environmental Education to address this climate



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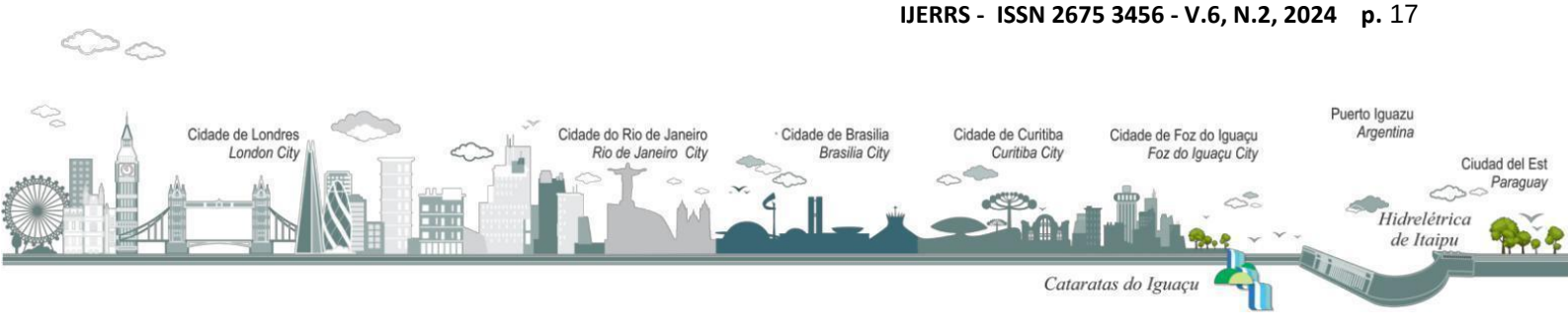
emergency and move towards climate justice? It should assist these people, in Canada and Brazil, in comprehending the relationship between their limit-situation and empower themselves to develop better capacity of response and reduce their vulnerability to climate emergencies. To achieve that, it is necessary to revisit the three dimensions of the pathway to climate justice presented by Kashwan (2021): a) the Distributional Effects of Climate Change should be sought by limit-actions and political empowerment to influence plans for climate emergency; b) Procedural Rights should be sought by limit-actions and knowledge empowerment, but also by scientific literacy to develop those necessary skills to participate and influence on the right decisions according to their social interests; c) “Recognitional” Justice should be sought by more limit-actions and social empowerment to occupy the public sphere and address their interests. And the access to knowledge cannot be done by reproducing the banking concept of education, severely criticized by Paulo Freire (1983): the knowledge acquisition should be active, participatory and promote individual self-confidence. That's why there was an interdependence between Freirean pedagogy, action-research and empowerment (Saito, 1991). The generative themes, unfolded from the initial vulnerability understanding from the limit-situation should be a never-ending process of knowledge discovery.

Then, the guiding questions proposed by Torres *et al.* (2021), converted to issues about what problem-posing dialogical strategy can be developed: and in this case, for both situations, climate local actions are not including dialogues with traditional communities and they are far from the promotion of climate justice.

FINAL WORDS

Juliette Torabian (2021) wrote that "We need Paulo Freire’s education ideas more than ever". She was absolutely right in writing this, and it fits perfectly to our reflection about Environmental Education to address the Climate Emergency.

She also addressed Freirean pedagogy as a potential activator or catalyst of democratic dialogue and participation. The pathway we offered here to develop an



environmental education framed by Freirean critical approach shows how generative themes can tackle different societal and environmental issues, delve deeper towards an empowered community. Through the exploration of generative themes, individuals engage in critical reflections, unraveling interconnected layers of understanding related to their environment and societal contexts. As the dialogue progresses, the depth of exploration increases, paving the way for an empowered community actively participating in the public sphere.

Nevertheless, she also said that critical pedagogy requires a safe and enabling environment where it can be practiced and become an activating catalyst. How did she stand this position? She recognized that within neoliberalism and its different types of job organization (a tendency to normalized short-term contracts) with academic freedom systematically under attack, educators may not feel free to practice critical pedagogy and scholars are at risk. We could see this in Brazil in recent years with the rise of the School Without Party movement, and all the efforts to suppress any critical pedagogy and the Freirean pedagogy in particular, under the hegemony of globalized neoliberal thinking.

Therefore, the pursuit of climate justice by environmental educators through a Freirean approach transcends the environmental realm; it becomes a broader struggle for democracy in the face of challenges posed by necropolitics. This intersectionality reinforces the notion that advocating for climate justice is inseparable from democratic principles and resisting the constraints imposed by neoliberal ideologies on education and society at large.

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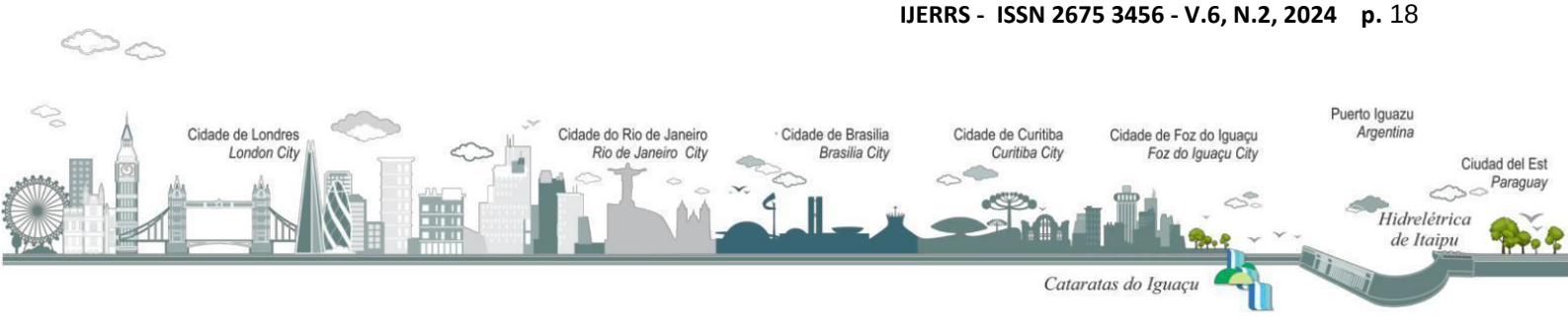

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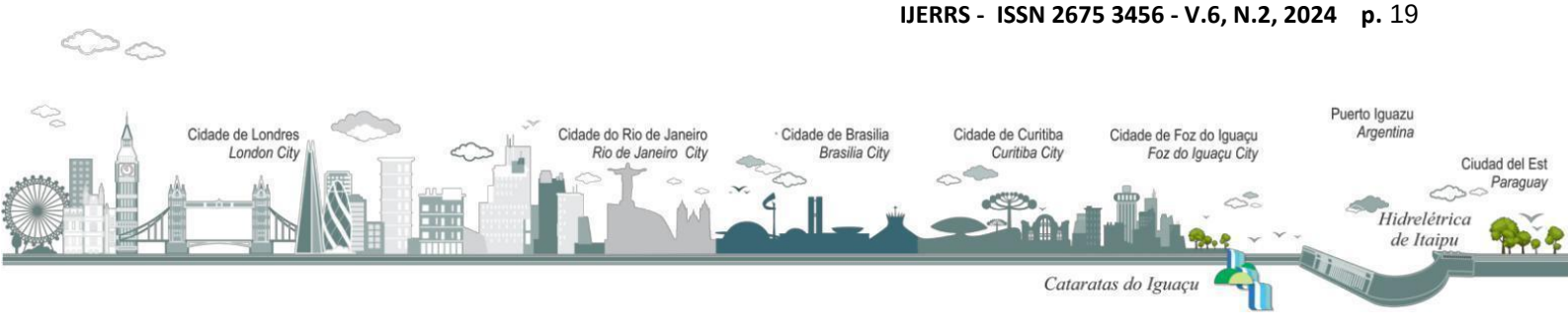

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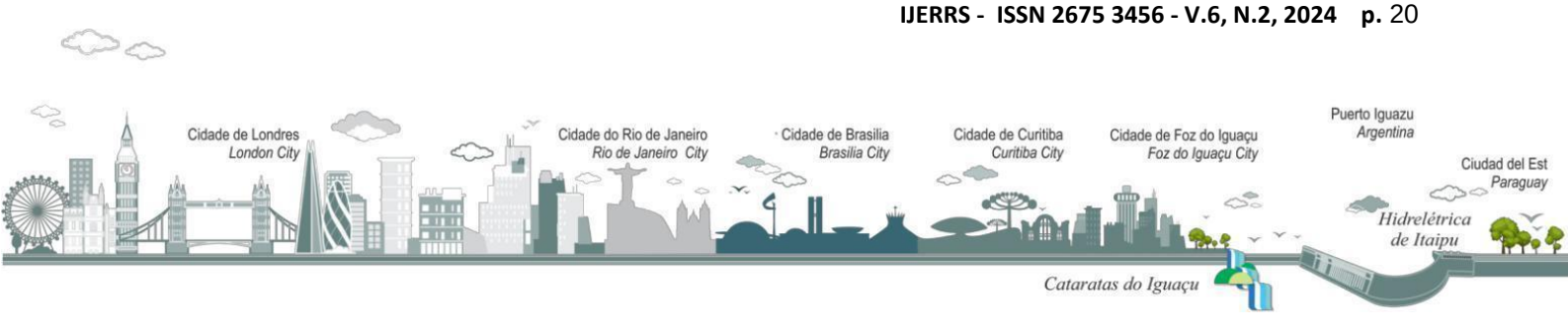

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