



The model of environmental education: a comparative study between Brazil and Bolivia

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Resumen

La formación de un ciudadano cultivado y ecológico, a través del cambio de actitudes, se deriva de la educación ambiental de los niños en escuelas y ciudadanos a través de campañas para fomentar la conciencia de lectura y ecológica. El estudio concluye que la transversalidad en el tema de la educación ambiental y las campañas de concientización de la población fomentan la participación y tienen el potencial de crear un nuevo paradigma en la educación ambiental.

La gente de Aldeira Terere, Brasil, no confía o gusta de la educación infantil tradicional, la educación ambiental se lleva a cabo a través de la familia.

En la comunidad indígena de Curicha, en Bolivia, solo hay una escuela del 1° al sexto grado, pero el tema de la educación ambiental no se trabaja, ni siquiera transversalmente.

Dado este contexto de actitudes cambiantes, este trabajo propone un modelo basado en comunidades de práctica y alineación con la comunidad indígena hacia un nuevo paradigma de educación ambiental (modelo MPEA).

Palabras clave: acceso al conocimiento; Educación ambiental; Libertad; Participación social.

Abstract

The formation of a cultured and ecological citizen, through the change of attitudes, is derived from the environmental education of children in schools and citizens through campaigns to encourage reading and ecological awareness. The study concludes that transversality in the environmental education theme and the awareness campaigns of the population encourage participation and have the potential to create a new paradigm in environmental education.

As the people of Aldeira Terere, Brazil, do not trust or like traditional early childhood education, environmental education is carried out through the family.

In the Curicha indigenous community, in Bolivia, there is only one school from 1st to 6th grade, but the topic of environmental education is not worked on, not even transversally.

Given this context of changing attitudes, this work proposes a model based on Communities of Practice and alignment with the indigenous community towards a new paradigm of Environmental Education (MPEA model).

Keywords: access to knowledge; environmental education; freedom; social participation.

INTRODUCTION

Wetering et al. (2022) shared the idea that education can be a vehicle to spread knowledge and help protect the natural environment has gained prominence since the 1960s. As formalized at the world's first intergovernmental conference on environmental education (Tbilisi Declaration; United Nations Educational, Scientific, and Cultural Organization [UNESCO] & United Nations Environment Programme [UNEP], 1977), the initial goals of environmental education were to foster global public knowledge about environmental issues and increase individuals' motivation and skills to protect or improve the natural environment (Wetering et al., 2022).

The environmental education proposal for children bases on the model proposed by the Ciclos do Brasil Institute – an NGO created in 2008 in Rio de Janeiro, Brazil. The Ciclos do Brasil Institute created the “Livro de Rua” and “Tabernados Bardos” projects that receive financial support through small and medium-sized entrepreneurs in the neighborhood where the school is located, as the project has treated the character of children and adolescents, with a significant decrease in violence. After the delivery of the books, storytelling workshops held with the help of teachers and psychopedagogists. It should be noted, however, the difficulty of teachers with the theme of Environmental Education, which is the main obstacle in the insertion of the theme Environmental Education, in a transversal way.

In relation to young people and adults, the proposed model suggests government ecological awareness campaigns with donation of books and guidance. Both formal and informal

education help in the formation of a cultured and ecological citizen who has the potential to contribute to both control and social participation, which leads to the construction and execution of more effective public and private policies, that is, with better results from the beneficiaries' point of view.

This article structures as follows. In addition to this introduction and conclusions, section 1 discusses the theoretical relationships between development such as freedom, education and citizenship. Section 2 shows the difficulties and changes proposed in both formal and informal education. Section 3 demonstrates the relationship between agricultural cooperatives and environmental education. Section 4 addresses the methodology. Finally, section 4 exposes the MPEA model, combining the various theoretical elements gathered throughout the previous sections.

I- THE RELATIONSHIP BETWEEN DEVELOPMENT AS FREEDOM, EDUCATION AND CITIZENSHIP

Amartya Sen's (2010) view on development calls the “approach to development as freedom” or the “capacity building approach”. For this Indian author, development links to the expansion of human capacities and freedoms, in a process in which personal choices expands to live life fully. This implies that good public action not only distributes goods to passive recipients, but also expands people's choices and promotes their capacities, including the ability to choose.

Andrade et al (2016) maintain that economic growth needs to be accompanied by instruments that enable the advancement of capacities for the population, through distributive tools.

In turn, education allows the individual to broaden his cognitive horizons, to have access to important information, knowledge and knowledge, to better understand the world and himself and to face the problems of life that are best equipped to solve them. According to Sen (2000), education appears as an instrumental freedom for development. Education is so important that it means that being well educated is an end in itself, given the practical inseparability between being well educated and being free. That is why the deprivation of educational freedom is so serious for the development of a people, deserving the greatest and best efforts of society to remedy this deprivation.

In the case of educational deprivations of the Brazilian people, in theory it is easy to show that they interact with low labor productivity, low worker earnings, which should be an obstacle to both a more vigorous growth of per capita income in the long run, and in achieving a more equitable income profile in Brazil. It will be up to empirical works to show the existence and magnitude of the effect of the Brazilian's lack of education on the lack of ecological awareness, which, although it has been present for centuries in our country, after the mud tsunamis that occurred in Brumadinho and Mariana had a great impact on the national social and political life. However, from a theoretical point of view, it is possible to show that political freedom, so hard won in Brazil, will only give good results as education and ecological awareness, when there is general access to quality education and freedom of expression in the dialogues between government and society.

A quality educational system that is balanced in its scientific and humanistic segments is fundamental in promoting the condition of agent, which Sen (2000) talks about: it is essential that people have the power to act as citizens, not being restricted to mere well-being vassals fed, well dressed and well entertained. A State that takes all decisions on behalf of the citizen, by leaving him no choice, also limits personal liability. This state of affairs would be a stark obstacle to development as freedom. A reasonable alternative is the defense of a State that provides people with more opportunities to choose, so that they exercise their responsibility (idem, ibidem, p. 284). Therefore, Amartya Sen's approach to development as freedom can coherently articulate the themes of education, citizenship and environmental education / awareness.

In 2012, a bill approved by the Federal Senate to include the subject of Moral Citizenship and Ethics in Brazilian school curricula. Undoubtedly, this is a praiseworthy initiative, since instruction on the organization of the democratic state and on civil rights that deal with man's own freedom are two fundamental areas of civic education in schools, which we need to give great attention. These themes take a frame in a path of formation of the citizen's conscience, aiming at the acquisition of the attitudes and habits that underpin social responsibility feed the civic initiative and foster human solidarity.

There is, however, no measure to implement, in a transversal way, the theme of Environmental Education in schools, despite what governs the National Environmental Education Policy (PNEA), governed by Law No. 9795/99, and

Resolution No. 02/2012 of the National Education Council. Although Art. 4 of Law No. 9795/99 (BRASIL, 1999) indicates transdisciplinarity in its item III as Principle, working on contents through the closed logic of “disciplines”, or aggregating them in a disciplinary eclecticism is not the same as build pedagogical processes that are transversal. In the same process, we see the expression of a “holistic” principle of focus on item 1, but not properly indicated at what point. Even so, we can see a normative effort in the political construction, even though we have no revision of the law on this point.

It is important to note that the insertion of the discipline of Moral Ethics and Citizenship, if it occurs, opens space for the discipline of Environmental Education. There is nothing to talk about educating environmentally without discussing the big problem: the development of citizenship. It is important to emphasize that we should not consider the development of citizenship as a historically linearized process, nor an accumulative one, nor exclusively by the school. This is because the formation of citizenship crosses by disputes both from a material and immaterial point of view, in progress and returns historically situated and in individual and collective senses. Throughout Brazilian history, internal antagonisms were not an adequate expression in the field of political discussions, as the political participation of the population has been a process protected and repressed by the State, under the control of the elites. This dual regime of tutelage and rerepression over the masses manifests itself in a certain alternation in the power of

governments that are either populist or authoritarian. And as Celso Furtado reminds us when analyzing the Latin American case, even when provisional solutions are found for economic, political and social problems, through certain institutional reforms (for example, the reforms of the Vargas era in Brazil and those of the regime post-1964), these solutions “feed more on ideological mimicry than on authentic political creativity” (Furtado, 2008, p. 122).

Therefore, the development of citizenship in Brazil is more a matter of practice than theory, more about art than science. Above all, it is a long historical process of mass disempowerment. To change this, it is necessary to develop the “Senian” capacities of individuals – with emphasis on their instrumental freedoms (economic, social, political, transparency and security) -, as well as the institutional arrangements that channel the popular will to the action of the public power.

This article argues that the development of citizenship, as a process of popular democratic maturation concurrent to the development of people's capacities and the consolidation of effective institutional governance mechanisms, is a necessary but not sufficient condition for education and environmental awareness.

II- SOLUTIONS FOR FORMAL ENVIRONMENTAL EDUCATION (theme transversal to mandatory subjects) and INFORMAL (government campaigns, companies and educational institutions).

In the book *Environmental Education in Basic Education: between disciplinarization*

and the transversality of the socio-environmental theme (Lamin-Guedes and Monteiro, 2017) there is a collection of articles that make constructive criticisms of the Senate Bill 221/2015, which changed the Law 9795/99. All demonstrate unequivocally that transversality is more appropriate than disciplining Environmental Education (Lamin-Guedes and Monteiro; Alves; Grandisoli; Neto; De Camargo; Muniz and Lacerda; Costa e Freitas; Borges; Ferreira and Merelles, 2017) The proposal of PL 221/2015 is inconsistent with the guidelines hitherto in force, and even with the National Curriculum Parameters, which deal with the environmental theme in the form of a transversal theme to the mandatory subjects (Neto and Kawasaki, 2015).

Neto (2017) points out that the National Environmental Education Policy provides that Environmental Education should be working in schools through integrated interdisciplinary proposals, and not in a disciplinary way. The creation of specific subjects for Environmental Education appears only in teacher training courses, such as undergraduate courses or specialization courses.

Among all the articles that make up the book (Lamin-Guedes and Monteiro, 2017), what touches most directly on the crucial issue, the exercise of citizenship from the interdisciplinary curriculum to educate Brazilian students environmentally, is the article " Environmental Education in Formal Education "(De Barros, 2017).

In general terms De Barros (2017) points out that for an effective transformation, critical, participatory, dialogical and ethical environmental education is necessary in all modalities and at all levels. Therefore, this

education requires, fundamentally, the initial and continuing education of educators, under a global and interdisciplinary perspective.

The author stresses that acting in the environmental field requires global-relational readings of the world for a conjunctive apprehension of reality, and this involves rethinking and evaluating the objectives of the curriculum programs of educators of today-for-tomorrow, in the different areas and levels of knowledge and, therefore, of teaching. Such a perspective provides in Law 9,795 / 1999 (BRASIL, 1999). To try to transform environmental education into a discipline is to escape the responsibility of taking measures that make it as a commitment and established in viable legal documents. If the educational system fails to adapt to a law that based on such solid discussions, it is necessary to evaluate what prevents it from happening and seek to solve some obstacles that block the construction of an ethical and civilized society (De Barros, 2017).

To support his opinion De Barros (2017) addresses a work by Carneiro (2006) when explaining that this worldview contradicts the reductionist conception that nature is a simple source of resources that exists to meet a hegemonic progress of production and consumption regulated by laws that pragmatically interpret the solution to these problems (CARNEIRO, 2006).

De Barros (2017) also highlights the letter from Belgrade (1975; Unesco, 2016), where there was a need, 45 years ago, to review social, economic and political values and interests.

This is also the position of Macedo (1999),

when pointing out the difficulty of implementing transversality, due to the hegemony of disciplinarization, strengthened by capitalism (Ferreira and Meireles de Sã, 2007).

For environmental reasons, Toynbee understands it as "the fundamental contradiction that was established between the development models adopted by man markedly from the eighteenth century, and the support of this development by nature". The author, in particular, refers to models of a capitalist nature of development, which do not take into account the existing resource bases on the planet. At the same time, for contexts broadened beyond "environmental" issues, but related to the social, political and economic context linked to people's lives in a balanced and healthy environment (Baptista, 2012).

In the practice of schools, the research of Pipitone and Nossllala (2010) is important through questionnaires and interviews in three state schools in São Paulo of elementary education located in the city of Piracicaba, state of São Paulo. One of the teachers warned that students live in a reality permeated entirely by technology, so they do not see the preservation of natural resources as an important aspect of their daily lives. Similar results also found in a survey conducted by Tozoni-Reis, Teixeira and Maia (2011). Teachers take advantage of not complying with the rules of the National Environmental Education Policy (PNEA), governed by Law No. 9795/99, and Resolution No. 02/2012 of the National Education Council, which established the National Curricular Guidelines for the EA and provide for the transversality of EA at all levels and teaching modalities.

Macedo (1999) questions why crosscutting themes are not the central core of curricular structuring, since they express themes relevant to the citizens' education of students. At this point, Freire (1994) highlights how one of the greatest difficulties of transversal educational processes is his expanded understanding of Pedagogy and his departure from compartmentalized learning processes, closed in disciplines or in curricular components restricted to disciplinary contents.

We return here to the central point of this article: education as freedom of the Indian economist and philosopher Armatya Sen (2000).

Participation and social control are the main elements of shared governance between the State and society in order to improve the effectiveness of public policies based on the contribution of a cultured, ethical and ecological citizen. Shared governance generates relevant knowledge and wisdom if the State is interested in organizing, transferring and using this contribution. Popular knowledge has the potential to change the values, beliefs and assumptions of public actors, especially when added to the learning of schools and universities.

Borges (2017) in his article "Environmental Education: less speeches to give more time to actions" highlights the need for practices of reuse, recycling, reuse of products and raw materials and conscious consumption 'that are already inserted in the current legislation of Education Environmental but which are rarely met.

An awareness campaign in the field of environmental education must start from the school and then this can be done with the support of the city council, if there is interest, or an NGO involved in environmental issues.

Obviously people want to know the advantages of having ecological attitudes, more than the "simple" possibility of studying and working in a clean place.

It is important to note that people end up imitating others and do not make the slightest effort to place the plastic, paper, cardboard used in their merchandise in the trash.

The advantage lies precisely in the clear possibility of transforming these packages into new goods and here comes a learning process that also needs to be gradually inserted into the community.

The products that could be made with the collected garbage are the most varied possible and if you do not want to sell them, they can also be used as decoration or to facilitate the kitchen inside the house.

Children are the people who most need to be educated in respect for the environment, since they are the ones who can change the mental model of adolescents, young people and adults.

Likewise, recycled plastic bottles can become objects to decorate the interior of the house or garden. They are also ideal for creating pots to plant any type of seeds or as decorative vases.

If a sheet of paper is only scratched on one side, then it can be reused to scratch the other side. Recycling paper is one of the activities that children can do at home, they can also make figures and have fun while helping the environment.

Cardboard boxes can be reused by turning them into organizers to save space at home. Depending on their size, they can be used as waste containers; these can be covered with paper and then painted in the color of your choice.

Separating organic waste into compost, a great soil nutrient, is a great idea when it comes to how to recycle trash.

Leftover oil can be used in making candles and homemade soaps. In addition, the residues are recent, they can be used to grease molds and even lubricate small objects.

Pipitone and Nossllala (2010) in interviews with teachers through questionnaires and interviews, in three São Paulo state schools of elementary education located in the city of Piracicaba, state of São Paulo, Brazil, found that some of them mention the EA several times as a means to preserve resources such as water, soil, air, goods necessary for human life and actions to improve the quality of life of man, such as the question of the correct destination of the waste produced, planting trees in urban areas, energy savings, etc.

Borges (2017) points out that PL 221/2015 is also redundant and that there is no need for further laws, but actions to strengthen critical awareness of environmental and social issues (fundamental objective III of the PNEA), as well as encouraging preservation the balance of the environment, with the defense of environmental quality as an inseparable value of the exercise of citizenship (fundamental objective IV of PNEA).

In the article "What change does Environmental Education need?", Ferreira and Meirelles de Sá (2017) criticize the inclusion of the

Environmental Education discipline in the curriculum, as they do not know who the professional would be able to teach the classes. How could a single professional dominate subjects pertaining to different fields of knowledge, such as history, ecology and urbanism? What are the conceptual contents considered to belong to this “discipline” and which would be essential for an interpretation of contemporary socio-environmental problems?

To base his opinion Ferreira and Meirelle de Sá (2017) sought the understanding of Bursztyń (2014) who defends "The very nature and complexity of the problems to be dealt with in the universe of environmental issues - synergies, changing objects, scope, interests involved, overlapping different scales, revision of established paradigms, etc. - requires that the competencies to be mobilized are broad". And they highlight: Unfortunately “there are still resistances and / or misunderstandings about interdisciplinarity and transversality, which result in an apparent low effectiveness of Environmental Education actions in school environments” (Bernardes and Pietro, 2010).

According to Ducker (2003), the concepts of efficiency and effectiveness need use, in most cases, together, so that the stipulated objectives (productivity) can be fully achieved and done with the best use of time and resources (efficiency). Effectiveness, in turn, concerns the concrete result, or the actions that made this concrete result happen (ends - objective and desired goals) and establishes the relationship between the results and the objective. Effectiveness means being able to be efficient and effective at the same time, that is, obtaining the best possible result, maximizing available

resources, and achieving the objectives determined from the point of view of the beneficiary. An effective Environmental Education policy would be effective if well evaluated by students and with good results in the community in which they live.

On the other hand, in public terms, we could consider Effectiveness from the perspective of public responsibility (in English, we would situate the term responsiveness) in the context of how Critical Environmental Education could contribute to the concrete transformation of Citizenship in the face of understanding public problems of social relevance human development. At this point, Environmental Education, transversally constructed, guided by humanistic values, could point to concrete social and political subjects that materialize responsibility over themselves and considering the dimension of collective life.

Ferreira and Meireles de Sã (2007) argue that this awareness of the mismatch between “role” and practice motivates many people to think that Environmental Education should be a special discipline or, at least, that its creation be allowed to schools: Now , if we know that Brazil is a country in which some laws "stick" and others do not, it occurs to me that, in light of EA's more than disciplinary in its best sense, the law should advise against creating a specific discipline of EE, but it is better to have at least a guaranteed EE space in the form of a discipline, than to have anything at all (VELASCO, 2002, p. 4).

Ferreira and Meireles de Sã (2017) conclude that the issue of the inclusion of EA in the school curriculum has a solution, and it is a well-known and expected since the promulgation of PNEA in 1999, that is, a

generalized restructuring, which allows and demands the fulfillment of that which is already known to be fundamental:

a) special dedication to the process of training environmental educators, both in initial and in continued training; b) the expansion and promotion of the involvement of teachers, management, employees and students in spaces of participation and; c) the wide national discussion to define the desires with the transversal and interdisciplinary in education.

Environment, its limits and possibilities in the Brazilian educational context (LOUREIRO, 2007). Moreover, they warn "the simple obligation to create the specific discipline does not guarantee the solution to the current problem. First, because it may be just another law with no effectiveness. Second, because it goes against all concepts, studies and research in the area of EA. This PL causes a revolution with the wrong focus. The struggle should be different: to put into practice what is already law ". In addition, they propose: "Thus, in view of the defense of this social interest, a wide online consultation should be carried out, in which it was possible, in fact, to contribute to the construction of the bill, not just agreeing or disagreeing. In this context, holding public hearings would be another excellent way to enrich the discussion and, only then, arrive at a final text that should be voted on "(Ferreira and Meireles de Sã, 2017).

In the article "Environmental Education Reform: a project doomed to failure" Camargo (2017) points out that according to Loureiro (2006) environmental education escapes the traditional idea of school discipline because it is more comprehensive than any of these when seeking a participatory pedagogical process, permanent and critical. Thus, in order to achieve

minimally acceptable results, it needs to relate to the student's daily life, his relationships in his community, family and nature are key to achieving success in this theme. Conversely, if it is not in this participatory and social way, the tendency to not working is enormous (MINC, 1997, p. 61).

According to Camargo (2017), one of the main characteristics of environmental education is in its trans and interdisciplinary nature, that is, within the school environment and in the educational process, the environment must be addressed directly or indirectly by all its members, especially teachers (BRASIL, 1997), who should include this theme in joint projects that are developed and addressed throughout the school year (Camargo, 2017).

Camargo (2017) argues that perhaps the first point to debate is what is transversal in education. This concept is nothing more than the importance of combining several types of knowledge that cannot work on separately, that is: they are inseparable (GUERRA; MARÇAL, 2006). The case of EA is proof of this; it is not making it a discipline that will solve the problem. The debate is wrong, it is necessary to think about the difficulties of working with transversality in order to move forward in such a pedagogical approach, instead of demeaning environmental education to another university subject (Camargo, 2017).

In the article "A Non-Circular Debate: for an interdisciplinary school environmental education" Neto (2017) asks what strategy to follow "to reaffirm the essence and interdisciplinary origin of this area (Law 9795/99), or to choose the disciplinary approach (PL 221 / 2015)?

The first option will maintain a certain coherence with the core of the environmental theme, which is inexhaustible for any scientific discipline, but should bear some volatility of interdisciplinarity - which is always challenging in a school and academic model as fragmented and disciplinary as what prevails in the field. Brazil today. The second option, on the other hand, should highlight the maturation of the Environmental Education area and, according to the most current arguments, military because of the importance of specific training that can prepare students to deal with current environmental challenges, and which would require teachers with different training for the theme (Neto, 2017).

Nevertheless, considering the history of Environmental Education and its current moment in Brazil, the strongest evidence is that the creation of a specific discipline would weaken environmental discussion in society. The most recent proposals for curricular bases, such as the National Common Curricular Base, and even MP 749/2016, which modifies the curricular structure of Secondary Education, call for a reduction in mandatory subjects, not an increase. There is a criticism reiterated in society, including by the main corporate media, to the large number of compulsory subjects in the Brazilian basic school - this factor points out as a possible contributor to the dropout rates.

Thus, it is possible to see that the educational debate on the environmental issue in Brazil has not yet reached a degree of maturity and social expression so that substantial changes imposes on schools. There needs to be more support for studies and discussions on the subject, in different spheres, so that advances are feasible considering the concrete social reality in which we are located. More interdisciplinary exercises

need to carry out in schools, and more dialogue needs among teachers so that Environmental Education can reinforce and reevaluate the school.

Pipitone and Nossllala (2010) found that the majority of teachers in the three schools in São Paulo have superficial knowledge and even some none about legislation, which makes it difficult for them to be aware of the insertion of this theme in school. Regarding the potentialities cited by teachers for the inclusion of Environmental Education - EA in the school, the following stand out: the possibility of carrying out work in an interdisciplinary way although this is not happening in practice (Lisboa and Kindel, 2012), the integration of EA in various disciplinary contents, methodological practices focused on discussion, debate of ideas, oral explanation, dialogued exposition, good actions focused on what would be ecologically correct, improvements in the quality of the school and urban environment (Pipitone and Nossllala, 2010).

Gugssa (2023) in the interviews found a very important answer from one of the teachers "I really lack the capacity to teach environmental issues, especially to children. I was not trained in how to plan and implement environmental activities for primary school students. I often teach based on my assumption and general understanding".

Damoah and Omodan (2022) found, as the results of the application of an Environmental Education Questionnaire (IEEPQ), that there is no practical and structured policy design for Environmental Education (EE) in schools and that teachers and principals donot understand the policy objective of environmental education due to its obscurity.

Nevertheless, evidence suggests that pleasant experiences in contact with nature can positively influence beliefs and feelings about nature (Collado & Corraliza, 2013; NEIMAN; Ades, 2014; Richardson & Sheffield, 2017). In a recent survey, children who had leisure experiences in open parks had a heightened sense of connection with nature and tended to agree that the visit made them want to take better care of the place (Crawford et. Al, 2017). The Center for Applied Ecology of the Higher Institute of Agronomy of the University of Lisbon, Portugal, launched the environmental education program “covered by aid - a forest to be discovered”, aimed at students in Basic and Pre-School Education. Using the agricultural space privileged forest that is Tapada da Ajuda, activities are developed that seek to be complementary to the themes addressed in a school context, promoting their understanding from the most practical point of view. The guiding principles of ecology and nature conservation investigates, starting with recreational activities and a tendency to be practical and experimental, appropriate to the public in question.

Wetering et al. (2022) found that environmental education appears to benefit students’ environmental behavior. That said, this finding is consistent with evidence from a previous meta-analysis on the behavioral outcomes of environmental education, conducted more than 20 years ago (Zelezny, 1999). For example, while knowledge about climate change may not be a sufficient driver of environmental behavior, so called “action knowledge” on how to engage in environmentally friendly behaviors (e. g., how to recycle waste) may effectively instill in young people the conviction that they can have a meaningful environmental impact, and thus foster behavior change (Otto & Pensini, 2017).

In Brazil, the School Project, an initiative of the group of Greenpeace volunteers around Brazil, seeks to expand the importance of a new environmental awareness for future generations. To this end, last year they took up the discussion of topics such as global warming, deforestation in the Amazon, the importance of recycling and conscious consumption into classrooms and communities in the country, reaching 500 young people.

On the other hand, the lack of time for contact and understanding of nature not only influences the personal and professional development of Brazilians, but also contributes decisively to widening the gigantic social gap and environmental situation existing in the country, promoting more exclusion and less citizenship. With regard to adults, non-formal education bases on participatory citizenship. Moreover, here we refer to the political character of EA as part of the social and non-compartmentalized structure, instrumentally as “closed” in curricula. The non-formal meaning depends on the formal that guides us or better, if it does not, it has effects linked to the development of the former, where formal education provides subsidies so that in informal education, notably, closer to the place, territory and social histories, establish the most fruitful relational connections for human development (human in the sense we have already referred to).

Morgado and Araújo (2018) highlight that participatory citizenship, understood as a social practice concerned with the common good, represents the core and formative horizon of an EA committed to the concomitant transformation of social injustices and ecological degradation. Therefore, thinking about EE is not only providing theoretically, but also situating in everyday practice the critical element of good living, respect, the common

good and commitment to future generations, as advocated in article 225 of the Brazilian Federal Constitution, about care.

In line with this, Gugssa (2023) found that the teachers were of the belief that the delivery of environmental content should be hands-on, place-based, and that students taking local actions. However, teaching approach tended to be teacher-dominated and classroom-based and safety issues were identified as barrier to teaching environmental topics. Changes are needed if we genuinely wish to build civically engaged and capable youths who can confront the escalating environmental crises (Gugssa, 2023).

The Communities of Practice are the ideal place to discuss the main purposes of EA proposed in the National Environmental Education Program (ProNEA) and the Environmental Education Treaty for Sustainable Societies and Global Responsibility (Brasília, 2005), in addition to PLS 221/2015 opening thus democratic and participative spaces for community environmental management, as instruments of learning and social emancipation.

The Communities of Practice will collaboratively organize Environmental Education practices and policies, especially in the training of leaders and educators.

Morgado da Silva and Araújo (2019) point out that, in the context of EA, Community Forums are a proposal capable of contributing greatly to the construction and exercise of citizenship. First, because it must be a democratic and participatory environment where the communities ethical conflicts and political-social problems are unveiled and debated with the intention of transforming reality.

This environment creates through the knowledge management practice known as "Communities of practice - CoPs. However, the discussion mediates by an Organizational Intelligence practice "Expert analysis" in order not to cause incomplete understanding of the situation or an avalanche of information.

Oliveira and Villardi (2014) explain that to stimulate the formation of CoPs, one must consider, according to Gherardi (2003), and that people, their emotions and desires directly influence social interactions and the way they perceive themselves and working groups. People, according to the author, motivates by the search for knowledge as an end in itself. However, Moura (2009) points out that CoPs were rarely studied in a critical perspective, although Lave and Wenger (1991) recognize the dimension of power involved in CoPs, and Wenger (2000) recommended not to understand CoPs with a romantic view, because " They are the cradle of the human spirit, but they can also be your prisons "(Wenger, 2000, p. 230).

When engaging in learning contexts, people dialogue, negotiate meanings based on their professional and everyday experiences, streamline their individual reflection processes and contribute to the reflection of others. Thus, the group's reflexivity, learning and social competence collectively expands itself, being able to constitute communities of practice (CoP) in organizations (Souza-Silva & Davel, 2007).

Three elements characterize a CoP: domain, community and practice: (a) Domain, a CoP presents an identity defined by a shared set of interests, committed members who have a shared competence, learn from each other, stand out and are valued by this collective competence, they are not just a club of friends;

(b) Community, participating in a CoP involves participating and discussing joint activities, mutual assistance and sharing information among members due to their interest in the domain they hold. To keep it going, CoPs build relationships that allow them to learn from each other, even if they do not work together daily;

(c) Practice is characteristic of a CoP because its members are practitioners and share experiences, stories, tools, ways of solving problems, that is, they carry out a shared practice (Wenger, 2006).

The entry of new members into the community is made by their progressive engagement, getting involved in collective practices through their 'legitimate peripheral participation' (PPL) that perpetuates a CoP through which newbies learn and socialize until they are gradually recognized as members of that community (Gherardi et al., 1998).

Adherence to the informal environment of social interaction and the collective engagement of CoPs are important to build, transmit knowledge and promote group learning situated (anchored) in practice (Gherardi et al., 1998).

It is suggested that a Community of Practice be created to discuss best practices in teaching and learning in Environmental Education and that an expert on the subject be appointed to organize and motivate the exchange of knowledge and experience and deliver the proposals to the decision maker.

Damoah and Omodan (2022) highlight that the policy guidelines should detail specific aims and objectives, teaching and learning methodology, and assessment guidelines for the teaching and learning of environmental education as an integrated component. The policy guidelines should redefine the scope and parameters of environmental content in all subject areas in the curriculum to address the issue of imbalances of environmental themes in other disciplines.

The teaching educational practice occurs, for example, in the fourth phase of the Degree Course in Rural Education at the Federal University of Santa Catarina (UFSC), in the curricular component entitled Fundamentals of Natural Sciences and Mathematics in Rural Education II. This curricular component is intended to deepen specific knowledge in the areas of Natural Sciences and Mathematics and was taught by teachers in the area of Physics Teaching, Mathematics Teaching and Biology Teaching (Borges et al, 2017).

3– Agricultural cooperatives: main basis of environmental education

Every community that has a cooperative greatly facilitates the formation of culture and climate conducive to environmental education that passes from the business level to the family and educational level.

Cooperativism has become a clear alternative for socioeconomic development, but critics claim that there is no methodological coherence to support such a statement and therefore praise the research problem. However, the gigantic potential of cooperatives to facilitate the creation, development and accumulation of social capital is undeniable, through strategic actions that intensify mutual trust between cooperative members and then the exchange of goods, knowledge and experiences within this environment. collaborative.

Interaction, trust, the definition of common objectives and the structuring of the social network are fundamental issues to understand the cooperative process.

Social capital, according to Pedro and Christian, affects the provision of services, affects development, improves the management of mutual resources, helps to improve education

and reduce social conflicts and compensates for the deficiencies of the State.

And more than that, social capital is credited with reducing the poverty of individuals and entire nations, as Van Bastelaer Grootaert points out in the work entitled *The role of social capital in development: an empirical evaluation* and François in the work *Capital social and economic development*.

Lin, Cook, and Burt in the book *Social Capital: Theory and Research* argue that social capital theory expands the individual perspective advocated by neocapitalist theories to include capital captured through social relationships.

In the literature on the subject, relationship networks, unlike the most popular social networks such as Facebook, present very low levels of information redundancy due to the creation of a base of mutual knowledge and high levels of trust between their actors, key components of the social network. capital.

Interaction, trust, the definition of common objectives and the structuring of the social network are fundamental issues to understand the cooperative process and the relative importance of social capital for the development of the place where it occurs.

Cooperative institutions are found in various sectors of the economy, such as: agriculture, health, credit, transportation, education, etc. Among these sectors, the one that has the best structure and receives great national prominence is agriculture.

This branch of cooperativism has enormous potential for the formation of social capital, since it promotes actions that aim to bring together, in addition to the group of cooperators, the local community.

Cooperatives provide services to their members, such as technology transfer, specific technical assistance, acquisition of inputs, production processing (storage and drying), transportation, marketing and seed production. All of these services are provided so that the member can achieve better productivity and continue delivering their production to the cooperative.

Cooperatives have some actions to cultivate this relationship, of which the following stand out: youth group, monitoring the level of fidelity in the delivery of production; continuous training, organization, transparency and ethics in the exchange of information to generate relevant knowledge, intelligence and wisdom.

The actions developed by the cooperative aim to show the member that the relationship is long-term and not short-term and this works very well in a culture of sharing.

It is observed that cooperatives are concerned with maintaining the network and nourished social capital in the long term, however, there is a dispute between the operational (short-term) and strategic (long-term) results of the cooperative member.

In cooperatives it is observed that there is an incentive for this exercise of long-term mentality through routine activities with the member. Carrying out actions, such as training and “field days”, brings the member closer to the cooperative and creates a bond between members.

Some actions result from this, such as the exchange of loans of inputs and machines between cooperative members.

The purpose of the cooperative is to act in the education of its members in order to develop cooperativism to create a more supportive and participatory man.

The country forming this type of culture of sharing and mutual growth greatly influences the culture of the school's children to work on a topic related to agriculture: environmental education.

4- Methodology

To build the model, the action research methodology was used. This methodology seeks to understand how a family of related approaches integrates theory and practice with the goal of addressing important organizational, community and social issues together with those who experience them (BRADBURY, 2015; BRYDON-MILLER; COGHLAN, 2014). It focuses on creating collaborative learning spheres and designing, implementing and evaluating liberating actions, combining action and reflection in continuous cycles of cogenerative knowledge (SHANI; COGHLAN, 2019).

Besides the action research to construct the research model, after a wide range review of theoretical and empirical research, this research adopted semi-structured interviews to obtain input from targeted respondents and achieve the objectives of this research project. The use of key informants from organizations for data collection has been a popular method in many research contexts (Huber and Power, 1985).

IV. A MODEL OF POPULAR PARTICIPATION AND CULTURAL CHANGE TO BUILD A NEW ENVIRONMENTAL EDUCATION PARADIGM

Cultural change via collaborative learning improves environmental education because it encourages people to work collectively with the sense and purpose of the common good.

It is paramount to understand the impact of culture on knowledge and intelligence.

The culture - knowledge - intelligence model (CKI) is presented in Figure 1.

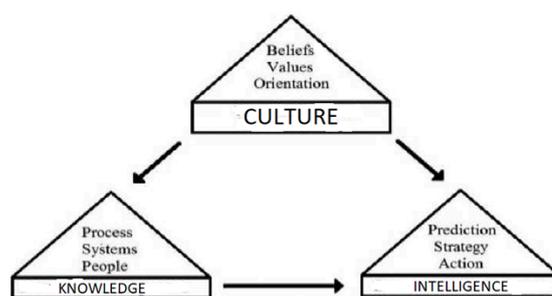


Figure 1. The CKI model (adapted from Choo, 1988)

According to Holland (1936), the installation of the Republic in Brazil was carried out in an improvised manner and he emphasizes that the same thing happened throughout South America: Constitutions designed not to be fulfilled, existing laws to be violated, all for the benefit of individuals and oligarchies, are current phenomena throughout the history of South America. [...] others served the motto "Freedom", even more prestigious, at the same time as they sought to consolidate in its name a positively dictatorial and despotic power (Holland, 1936).

Indeed, the lower the level of education, the easier it is to maintain dictatorial regimes disguised by rulers who feed the people's ignorance. This culture strongly impacts the environmental issue and we have great difficulty in gaining trust among people to

initiate movements to build cooperatives that would encourage school leaders and teachers to insert, in a transversal way, environmental education in schools in Brazil and Bolivia.

The model for a new paradigm in Environmental Education - MPEA clearly demonstrates that there is an impact of what happens to adults (farmers in indigenous villages) in relation to the education of their children (transversality of environmental education), which obviously motivates an awareness campaign when the importance of the issue throughout the community is seen that teachers and school leaders are the opinion makers of communities.

The relationships sketched intuitively in the paragraphs above, take on a formal character in the model of formal and informal education to create a new paradigm for Environmental Education – MPEA .

Figure 1 illustrates the model's concepts and relationships.

For Phillipi Jr and Pelicioni (2005) with a view to the purpose of sustainable development, it would be essential to educate the population, so that they, environmentally aware, would engage and demand from companies, government and society in general the changes pertinent to human sustainability itself.

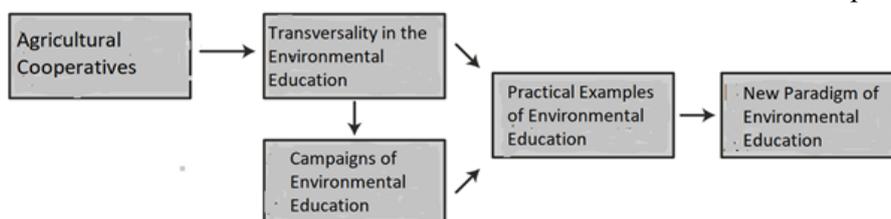


Figure 1: The MPEA model (own elaboration)

The MPEA model demonstrates that a more holistic governmental view of the world, based on internal collaboration, which generates a new awareness in relation to the supremacy of the public interest. The model is a propagator of change based on corporate social responsibility, the exchange of knowledge and experience, which is potentially wisdom.

This approach to development as freedom, defended by the Indian economist and philosopher Amartya Sen, will only met in Latin countries as long as there is respect for human rights and this can be a demand of Brazilian and Bolivian society by the time that they desire to access education.

Collection and Discussion of results

This research relies on a study performed on two indigenous villages, the first in Brazil (Terere) and another in Bolivia (Coricha) , conducting semi-structured interviews, 6 questions across 3 dimensions - (i) Awareness, (ii) Transversality, (iii) participation and paradigm shift dimension - . In total 6 interviews, three in Brazil (Terere Indigenous village) and three in Bolivia (Corucha “indigineous” village).

The CURICHA indigenous community has 316 members, 80% Catholic and 20% Evangelical. They affirm that there is room for both Environmental Education and Agricultural Cooperatives, there is abundant water, but there is no donation of seeds for planting.

The indigenous community of Curicha, Bolivia, is very different from the indigenous community of Terere, Brazil.

This is due to the fact that the first is quite isolated from civil society in the city of Sidrolândia (Brazil), while the second has habits very similar to people in the city of São Matias (Bolivia).

In the Terere indigenous village there is not much interest in technology and so there is more care for the environment and personal relationships with both family and friends and the indigenous community in general, given the level of trust between members who share the same values, beliefs, assumptions and especially traditions, which also leads to respect between them due to the same lifestyle, more rustic, simple, and with a sense of sharing and mutual growth.

In the Curicha Community, on the contrary, it is very difficult to build an agricultural cooperative, despite there may have been interest in the interviews.

Interviews are particularly useful for getting the story behind a participant's experiences. The interviewer can pursue in-depth information around the topic (McNamara, 1999).

We conducted interviews on one-on-one basis and compared and contrasted the results ourselves, avoiding focus groups due to their elevated potential for acquiescence bias (Schaffer and Riordan 2003).

However, the main objective of the questions was to observe the level of collaboration with the environment. It observed that the six interviewees were unaware of environmental programs, such as selective collection.

However, everyone, without exception, would like the responses to be proactive, which is why reflection served to understand which constructs are important for the formation of consciousness and the ecological knowledge of environmental education students for the participation of quality in government projects and programs that involve indigenous people, as well as a mechanism for greater integration between students from outside the village and indigenous children.

In Brazil, issues related to indigenous ethnic groups pose several problems for the protectors of the Amazon and other universal heritage sites.

The occupation of large extensions of indigenous lands with the argument of implementing agricultural activities reduces the availability of natural food resources for indigenous people, given the difficulty of communication with farmers, many of whom are accused of raping selected indigenous people with second intentions.

Many farmers spread the idea among the population that some Indians exploit the illegal sale of wood, but the reality is that the Indians, mainly from Acre and Amazonas, to survive from the attacks of farmers and their henchmen, take refuge in remote areas of the forest, maintaining some habits unchanged and, without access to medical care, suffering from malaria, worms and other diseases.

In fact, logging companies pay little attention to environmental conservation and to achieve further deforestation they need to confront the guardians of the Amazon and natural heritage: the Indians.

According to the Cimi (Indigenist Missionary Council), an organization linked to the CNBB (National Conference of Bishops of Brazil), 167 indigenous people were murdered between 1995 and 2002. The figure increased to 452 in the period (2003-2010), an increase of 170.7%. The death of Indians also occurred in Sidrolândia, 24 kilometers from Aldeia Terere, when the Indians were trying to recover their lands. The issue of demarcation of indigenous lands is advancing very slowly in Brazil. According to the Socio-Environmental Institute (ISA), the temporal framework thesis has been used by the federal government to block demarcations and has been included in anti-indigenous legislative proposals. Rural owners argue that it is necessary to guarantee legal certainty and point out the risk of expropriations if the thesis is revoked.

Many people think that there are no indigenous people living in isolation in Brazilian territory, given the presence of the National Indian Foundation (Funai), however, according to those interviewed in Aldeia Terere, FUNAI adopted a more political stance, and therefore with greater distancing. of indigenous peoples, a fact that also contributed to the increase in mortality rates related to tropical diseases and poor nutrition, and in particular access to education.

In the interviews, the indigenous people of Aldeia Terere, in Sidrolândia, were unanimous in answering question 1. Are there campaigns to encourage reading about environmental issues? They respond that the campaigns are selective collection practices.

They also point out that they respect the environment and the people who live in the city, but that they do not respect them, and that there

is a lot of discrimination and even sexual abuse towards those who work in the fields to earn money income.

They agree that the topic of environmental education has to be taught transversally and even coincide with examples of mathematics (plane geometry, how many plants fit in a given garden), biology (photosynthesis), chemistry (soil composition) and literature (poetry). , history (struggle and respect for the land), etc.

It is also important to note the complaint of indigenous farmers who need tractors and agricultural knowledge that was previously only provided through Embrapa, Emater and Epagri to non-indigenous civil society. They think that environmental education, from childhood, can facilitate collaboration between the two cultures and, consequently, respect for nature, since it is impossible to dissociate nature from those who live in it.

At this point, it is very important to highlight that the National Rural Learning Service (Senar) and the National Agency for Technical Assistance and Rural Extension (Anater) signed an agreement in 2000 to offer free and online places in Senar training. and course development. for rural areas. The project offered 160,000 places for distance education courses until July 2022. The alliance benefited family farmers, rural producers and workers, field technicians and extension workers, beneficiaries of technical assistance and people linked to the agricultural sector, including some indigenous people. The EaD Senar portal currently offers 80 courses available in 21 areas, ranging from quality of life, management and entrepreneurship, vegetable production, sustainable fields, precision agriculture, rural digital inclusion and low carbon agriculture.

Regarding the governance dimension, the question “Are there shared actions between the school and the parents of the students?”

The indigenous people of Terere Village say that this would be a good solution for greater respect for indigenous children and that it could even change the decision of having to wait for a project from an indigenous councilor to create daycares and preschools in Terere Village and much more: The Indigenous children could attend daycare with students outside the village, leading to integrated respect and preservation of the environment.

In regards to the question “Is the theme "environmental education" worked from local examples and discussions?” The leaders of the CURICHA “indigenous” community in San Matías affirm that it is possible to include Environmental Education in the Cristo Balcolón School, but it depends on a meeting with parents and teachers to understand how the subject would fit into the regular curriculum, especially Mathematics. Regarding agricultural cooperatives, which is closely related to the issue of environmental education, they affirm that it is necessary for a project to be discussed in the Assembly.

About this question “Does the school carry out internal and external awareness actions and rights related to local problems?” the Terere village answered positively and the Curicha village answer negatively.

Unfortunately all interviewers answered negatively the two questions about awareness

“Are there read incentive campaigns? And Are there policies for guided visits to environments that encourage environmental actions?”

At this point, it is important to highlight the understanding that environmental education implies respect and integration with the indigenous community. In the interviews carried out, it was confirmed that the Terere indigenous community chose not to provide primary education to its children and is awaiting the result of a project by an indigenous councilor to establish daycare centers in the town, which today only has primary education and secondary.

The complaint is that students in “normal” schools call them bugs and wild animals and do not respect them, thinking that they are ignorant. In fact, they are the ones who respect nature the most for living in it.

According to Sen (2000, p. 243-244), the principle of respect for human freedom, which governs a people's right to free choice in relation to their cultural traditions, has at least two important implications. First, the appeal to tradition does not justify the general suppression of freedom of expression, nor does it justify the suppression of the political and civil rights of the population. Second, freedom to participate in collective decisions must always be ensured, including the provision of basic conditions for this - for example, the provision of information, knowledge and education for the people. In general, in approaching development as freedom, development requires that the population as a whole have the necessary skills and abilities for collective decision-making.

CONCLUSIONS

Environmental education should be undertaken to promote the creation of an educational process in order to form attitudes that predispose to action, especially towards disaster prevention and the preservation of the environment, through the use of environmental education for greater integration with the inhabitants and protectors of nature. , the Indians.

To achieve this, it is necessary to train conscious, critical, reflective, ethical, competent and proactive people, aware of their role in the transformation of the world. Environmental Education would promote the exercise of citizenship, constituting ideas contrary to the ideas of selfishness and individualism, in favor of social transformation with ethics, social justice and democracy, prevailing the improvement of the quality of life, all in line with the maintenance of a balanced environment. The active participation of the population is an essential means to improve the effectiveness of environmental policies. The MPEA model has shown that the transversality of environmental education learning in daycare, preschool, but also in primary and secondary education has the potential to form a mature ecological citizen, through the example of the resident indigenous citizen and defender of the nature, and capable of opening up to enriching external experiences and thus being able to contribute effectively to government programs and projects. From this perspective, people are beneficiaries and agents of the development process, which in principle should benefit all people equally and be based on the active and free participation of each of these people.

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