



## THE PERSPECTIVE OF CURRICULUM ENVIRONMENTALIZATION OF ENVIRONMENTAL EDUCATION IN THE INITIAL TRAINING OF GEOGRAPHY TEACHERS<sup>1</sup>

A PERSPECTIVA DE AMBIENTALIZAÇÃO CURRICULAR DA EDUCAÇÃO AMBIENTAL NA FORMAÇÃO INICIAL DE PROFESSORES DE GEOGRAFIA

LA PERSPECTIVA DE LA AMBIENTALIZACIÓN CURRICULAR DE LA EDUCACIÓN AMBIENTAL EN LA FORMACIÓN INICIAL DEL PROFESORADO DE GEOGRAFÍA

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**Abstract:** This article had as objective to present the main results of the research conducted on how the theme of Environmental Education is being addressed in the training courses for Geography teachers at Federal Universities of the southern half of Rio Grande do Sul. From this perspective, the focus of this proposal is on advocating for Curriculum Environmentalization (CE) as a teaching strategy. The methodology was organized into three stages: a) Literature review; b) Documentary research; and c) Content Analysis by Bardin (2011), for data collection and interpretation. Among the available instruments, an online questionnaire was used to collect data from the respondents. As results, we found that, the normative resolutions guiding teacher training, Geography and Environmental Education, show advances and setbacks in the released versions. Regarding the questionnaire responses, we noticed that course coordinators and teachers working with Environmental Education in the same course have different opinions on the subject. The vast majority of respondents associate studies on society and nature with Environmental Education. Furthermore, the Logical Sequence Frameworks (LSF) of the analyzed courses offer few mandatory subjects focused on Environmental Education, but, on the other hand, they provide electives throughout the sequence of the program. Finally, we believe that Curriculum Environmentalization, based on Behrend (2020), Mota (2020), and Rodrigues (2022), emerges as an approach strategy to mainstream Environmental Education in the training of Geography teachers.

**Keywords:** Environmental Education; teachers teacher training, curriculum Environmentalization; content analysis; Geography teaching.

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<sup>1</sup> This article is an excerpt from the dissertation defended in 2022 in the Postgraduate Program in Geography at the Federal University of Pelotas.



**Resumo:** O presente artigo teve por objetivo apresentar os principais resultados da investigação realizada a respeito de como a temática da Educação Ambiental vem sendo trabalhada nos cursos de formação de professores em Geografia, das Universidades Federais da metade Sul do Rio Grande do Sul. Nessa perspectiva, tem-se como enfoque nesta proposta, a defesa da Ambientalização Curricular (AC) como estratégia de ensino. A metodologia foi organizada em três etapas: a) Levantamento bibliográfico; b) Pesquisa documental; e c) Análise de Conteúdo de Bardin (2011), para coleta e interpretação dos dados. Dentre os instrumentos disponíveis, utilizou-se de questionário online para colher os dados dos respondentes. Como resultados, constatamos que as resoluções normativas que orientam a formação de professores, no ensino de Geografia e na Educação Ambiental, apresentam avanços e retrocessos nas versões lançadas. Em relação às respostas dos questionários, percebemos que coordenadores de curso e professores que trabalham com Educação Ambiental no mesmo curso ostentam opiniões distintas sobre a temática. A maioria absoluta dos respondentes associa os estudos sobre sociedade e natureza à Educação Ambiental. Ademais, os Quadros de Sequência Lógica (QSL) dos cursos analisados disponibilizam poucas disciplinas obrigatórias com enfoque em Educação Ambiental, mas, em contrapartida, oferecem optativas durante a sequência dos cursos. Por fim, acreditamos que a Ambientalização Curricular, baseada em Behrend (2020), Mota (2020) e Rodrigues (2022), se coloca como estratégia de abordagem como forma de transversalizar a Educação Ambiental na formação de professores de Geografia.

**Palavras-chave:** Educação Ambiental; formação inicial de professores; ambientalização curricular; análise de conteúdo; ensino de Geografia.

**Resumen:** El objetivo de este artículo fue presentar los principales resultados de la investigación realizada sobre cómo se ha trabajado el tema de la Educación Ambiental en los cursos de formación docente en Geografía de las Universidades Federales de la mitad sur de Rio Grande do Sul. Desde esta perspectiva, esta propuesta se centra en la defensa de la Ambientalización Curricular (AC) como estrategia de enseñanza. La metodología fue organizada em tres etapas distintas: a) Análisis bibliográfico; b) Investigación documental; Análisis de Contenido de Bardin (2011), para la colecta e interpretación de los datos. De entre los instrumentos disponibles, se utilizó de un cuestionario en línea para coleccionar los datos de los encuestados. Como resultados, se pudo constatar que las resoluciones normativas que orientan la formación del profesorado, en la enseñanza de Geografía y Educación Ambiental, presentan avances y retrocesos en las versiones lanzadas. Con relación a las respuestas de los cuestionarios, percibimos que los coordinadores de curso y profesores que trabajan con contenidos de Educación Ambiental en el mismo curso ostentan opiniones distintas sobre la temática. La mayoría absoluta de los encuestados asocia los estudios sobre sociedad y naturaliza a la Educación Ambiental. Además, los marcos de secuencia lógica de los cursos analizados proveen pocas asignaturas obligatorias con enfoque en Educación Ambiental, pero, en contrapartida, ofrecen asignaturas optativas durante la secuencia de los cursos. Por fin, creemos que la Ambientalización Curricular, basada en Behrend (2020), Mota (2020) y Rodrigues (2022), se pone como estrategia de abordaje como forma de transversalizar la Educación Ambiental en la formación del profesorado em Geografía.

**Palabras-clave:** Educación Ambiental; formación inicial de profesorado, ambientalización curricular; análisis de contenido; enseñanza de Geografía.

## **Introduction**

This paper discusses the topic of Environmental Education (EE) as an important tool for changing the behavior of society in the face of the environmental problems, which are also social, that we are witnessing today. In this sense, the article presents an excerpt of the research carried out as part of a postgraduate course, at Master's level, in Geography, at the Universidade Federal de Pelotas (UFPel).

The aim is to present the main results of the investigation of how the topic of environmental education has been addressed in geography teacher training courses at federal universities in the southern half of Rio Grande do Sul. Moreover, in this article, we intend to bring to light the proposal of Curricular Environmentalization (CE), based on Mota (2020), as an important teaching strategy for Geography Teacher Training Courses.

It is clear that the theme of environmental education pushes us to think and act in a way that values the natural and social resources that exist not only for current generations, but also for future generations. Although this issue has been discussed for a long time, it has also become so important today because it provokes us to reflect and discuss "the relationship between society and nature" (Oliveira, 2005, p. 578).

In this context, Porto-Gonçalves (2006) points out that environmental education has the potential to make important contributions to universities, due to its interdisciplinary nature and the fact that it can dialogue with different fields of knowledge. We also believe that geography courses offer opportunities to contribute, as a science, to the formation of a critical awareness of issues in spaces that promote knowledge, both formal and non-formal. One of these spaces is geography teacher education.

The idea is that these courses can be a pillar of a more critical and reflective education that extends into schools. School environments are, of course, ideal settings for promoting knowledge and awareness of the importance of a more sustainable world. For this reason, we believe that environmental education is an important topic in the training of professors.

Because we believe that environmental education can contribute to the training of geography professors, we were asked: "In what way do the geography teacher training courses in public universities in the southern half of Rio Grande do Sul (the focus of the study) build their curricular proposals on Environmental Education?"

The importance of the study is justified in the sense that we can learn more about how these universities develop their approaches to the subject of environmental education and whether this subject is based on the regulations or resolutions in force within the training curricula. From a social perspective, we believe that the proposal provokes reflection in future professors as an instrument to mobilize thinking and acting, as transforming subjects in formal and non-formal spaces, aware of the importance that Environmental Education confers in this change of attitudes and behaviors in relation to natural and social resources, as previously highlighted.

Based on this contextualization, and to better outline the proposal of this article, we will first discuss the importance of approaching environmental education in the training of professors. We will then present the main results of our research on how environmental education is addressed in geography teacher education programs. In the same vein, we will focus on the defense of Curricular Environmentalization (CE) as a teaching strategy, understood by Rink (2014) as the "process of reorganizing the curriculum" considering the "proposal of interventions that integrate socio-environmental issues into educational content and practices". Finally, we believe that through this, the topic of environmental education can expand the quality of teaching in initial training courses for geography professors.

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### **The contribution of environmental education to the training of geography professors**

The relationship between environmental education, teacher training and geography teaching is harmonious. In terms of what they propose, both seek to think and reflect on problems of various kinds (social, cultural, economic or environmental) and to find solutions. It's not just about fighting a problem, but above all about preventing or minimizing it. In addition, these themes encourage the training of future professors, incorporating ethical values and the principles of the exercise of citizenship. In this way, the promotion of the discussion of the teaching of geography in schools and universities through the environmental issue shows a commitment to social well-being. As Porto-Gonçalves points out:

The environmental issue makes an important contribution to rethinking the university itself. [...] The environmental issue is not what is conventionally called natural, nor is it social or cultural. It requires another paradigm that is capable of dealing with its historical-natural complexity [...] If reality is dissected into parts by the Cartesian departmentalization of the university, what the practice of university extension does is put the professor/researcher in contact with reality as it is, that is, a complexly structured whole where the natural and the social are not dissociated (Porto-Gonçalves, 2006, p. 192).

We also emphasize how difficult it is to consolidate the idea that the social and the natural are not politically separate. Perhaps this is a utopia that can be overcome. We believe that in the medium and long term, through the training of geography teachers, we can work towards and contribute to the development of a more critical, aware and supportive mentality because this is how environmental education presents itself and contributes to a better society.

Therefore, we have included in this debate the United Nations Sustainable Development Goals (SDGs) of the 2030 Agenda, which presents us with 17 Sustainable Development Goals that cover aspects of the environmental, economic and social dimensions. However, this is a complex mission, given that the current economic development model has created a predatory global society and, as a result, a society with much less reflection on environmental issues in general. It would then be necessary to invest efforts in the construction of a new mentality, with a sensitive, critical, responsible and supportive attitude, respectful of different cultures and individuals (Guimarães, 1995).

Ideally, the subject of environmental education should be approached in an integral way since it is in dialogue with many fields of knowledge. In this regard, Cavalcanti (2010, p. 11) contributes by stating that

Environmental education is understood as a social and political practice through which individuals can intervene in and transform the reality that surrounds them. It is linked to a change in society's attitude towards environmental care and mutual respect, which implies respect for life in all its diversity. This reference is well established in educational circles, with inter- and transdisciplinary experiences.

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However, sometimes we can find a different scenario. While developing some activities with the Geography Department of the Universidade Federal de Pelotas (UFPEL), as part of the Institutional Scholarship Program for the Initiation of Teaching (PIBID), we noticed that in some schools environmental education was approached in a one-off way. Teachers approached the subject with World Water Day or "plant a tree" campaigns. Actions such as these are valid for giving visibility and reinforcing the importance of discussing environmental issues, but they become insufficient when worked on in isolation. Therefore, the interdisciplinary nature encourages us to approach the subject in an integrated way throughout our education, understanding that the teaching and learning process is a collective construction.

Considering this finding, the question arose: why, despite the progress made over the decades in teaching strategies, are topics like these still developed on a one-off basis and at specific dates? Could it be that one of the reasons lies in the structure of the curricula of

educational institutions? Based on this question, one of the steps forwards was to investigate how geography teacher education programs have approached the topic of environmental education in their curricula, as well as to think about teaching strategies that can make the teaching and learning process integrated. To this end, the following section discusses the results of the documentary research carried out.

### **The theme of Environmental Education in Geography professor training curricula**

As we continue our discussions on Environmental Education, beyond the theoretical and regulatory issues of the teaching profession that were raised in the Master's program, in this and the next sections we will give an overview of the consultation of the PPCs of the three Teaching Institutions (TI) that were part of the research: a) Universidade Federal de Santa Maria (UFSM); b) Universidade Federal de Pelotas (UFPel); and c) Universidade Federal de Rio Grande (UFRG). This consultation made it possible to verify and identify the presence of subjects focused on environmental education.

The content analysis technique of Bardin (2011) was used to compose the field of investigation, in terms of the collection and interpretation of research data. The tool used to collect information in the content analysis stage was an online questionnaire. Because of the prepared questionnaire, the course coordinators and professors of the subjects corresponding to the research topic were contacted by e-mail and telephone to make an appointment. After signaling and contextualizing the intention to meet virtually, an email was sent with the link to the questions using the Google Forms tool. A time and/or date was arranged to clarify any doubts about the questionnaire so that they could provide their input. The respondents were teachers working with environmental education and course coordinators at the respective universities.

In order to gain a deeper understanding of the proposal, we feel it is important to list the disciplines identified as working on environmental education in the universities that are part of the research. The information was taken from the Pedagogical Course Project (PCP) of each university, available on their websites. Figure 1 shows the subjects covered by Environmental Education in the Geography program of the Universidade Federal de Santa Maria (UFSM).

Chart 1 - Subjects working on Environmental Education in UFSM's undergraduate Geography course

| <b>Semester</b> | <b>Subject</b>   | <b>Syllabus/Objectives</b>  |
|-----------------|--|---|
| 1º              | Society and Nature (compulsory undergraduate course).  | Understand how the major systems of thought throughout history have conditioned and continue to condition the way societies have related to and transformed nature on the Earth's surface.  |
| Any semester    | Geographical Analysis of the Society/Nature Relationship (complementary undergraduate course). | Critically analyze the dialectical relationship between society and nature. Understand the main environmental issues in the context of the contradictions of modern society. Identify and analyze new theoretical concepts that enable a harmonious relationship between man and the natural environment. Analyze and understand the role of Geography in current environmental problems. |
| Any semester    | Sustainable Cities: from Real to Virtual (complementary undergraduate course)                  | Understand the urban space of cities in the face of the environmental sustainability paradigm through reflections on the real and virtual world. Analyze the ways in which urban space is (re)produced through the use of public and private space, as well as the social movements and relationships that energize, (re)structure and construct new forms/content in/of urban space.     |
| Any semester    | Environmental Law (complementary undergraduate subject)  | Discuss the ethical principles involved in environmental issues, learn about national policy and legislation on environmental issues.   |
| Any semester    | Environmental Education in Geography (complementary undergraduate course).                     | Establish a critical reflection on the physical, economic and philosophical-cultural dimension of the environmental issue, identifying it in the different social practices and existing development models. Discuss, propose and evaluate educational practices related to the environmental issue, both in formal and informal education.   |

Source: Carvalho (2022). Adapted from the PPC at UFSM (2022).

Chart 1 identifies five subjects that focus on or are related to environmental education. The first of these is included in the curriculum matrix for the first semester. Thereafter, students can take other subjects of a similar nature in each semester. This feature of the UFSM Geography program is positive, as it offers the opportunity to be in contact with the subject, directly or indirectly, practically from the beginning to the end of the course, as well as to work on parallel projects that the course has and that are not mentioned in the syllabus.

Of the five subjects, one is compulsory and four are optional. The subjects range from environmental legislation to educational practices related to environmental education and geography, and this is another positive point.

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Next, we have Figure 2, which shows the subjects that work on environmental education in the Geography program of the Universidade Federal do Rio Grande (UFRG), taken from the Logical Sequence Chart (LSC) of the program.

Chart 2 - Subjects working on Environmental Education in the Geography degree course at UFRG

| Semester | Subject   | Syllabus/Objectives  |
|----------|---|--|
| 1°       | Perspectives on the Environment and Resources (optional subject). | Concepts of natural resources and the environment, ecological and social bases of socio-environmental management.  |
| 5°       | Geography and the Environment ( mandatory subject).               | History of environmental issues. From descriptive geography to socio-environmental studies. Integrated analysis and Geography. Systemic approach in Geography. Geography, contemporary environmental problems and Environmental Education. |
| 7°       | Socio-environmental Planning (optional subject).                  | Man: nature and culture, society-nature relations and the environmental issue. Society's responses to environmental problems. Environmental planning: theories and practices.  |

Source: Carvalho (2022). Adapted from the PPC at UFRG (2022).

Similar to the UFSM, the geography program at UFRG offers well-distributed courses on environmental education. The course allows contact with the subject at the beginning, middle, and end of the curriculum (first, fifth, and seventh semesters), between compulsory and optional subjects. The issue of continuous distribution throughout the degree is a point that we consider very positive. This is because the curriculum contains several concepts and theoretical and epistemological foundations that are important for discussion in the educational process. Therefore, we believe that this sequence creates the conditions for a more satisfactory and lasting work on the subject.

In addition, Figure 3 shows the subject of environmental education in the Geography program of the Universidade Federal de Pelota (UFPel), taken from the LSC of the program.



Chart 3 - Subjects working on Environmental Education in the Geography degree course at UFPel

| Semester | Subject   | Syllabus/Objectives   |
|----------|---|---|
| 7º       | Methodology and Practice V: Environmental Education (compulsory subject). | This course aims to deepen the debate on environmental issues from a critical perspective, as well as to discuss the limits of the educational process. The aim is to discuss trends and perspectives for Environmental Education in different educational contexts and to propose pedagogical practices that allow the curriculum to be transversal. |

Source: Carvalho (2022). Adapted from the PPC at UFPEL (2022).

In the Faculty of Geography at UFPel, we found a subject in the curriculum matrix that is offered in the 7th semester and that has in its syllabus a concern for the theoretical discussion of the subject, as well as the trends of this discussion in different educational contexts. Therefore, after looking at this survey, we can conclude that the theme of environmental education, in the courses of the section, includes a range of approaches that allow us to broaden the discussions, going through the critical relationship about the physical, cultural and economic dimension in society.

Another point that we consider important from the analysis of the curricula is the need to focus the proposals on educational practices in formal and non-formal education. This can be strengthened to a large extent through teaching, research and extension projects, in addition to the development of the subjects themselves. It should also be noted that the three universities in the study are developing extension projects and academic activities, through study laboratories, on the subject of environmental education, professorial training and geography teaching.

### **Questionnaires applied to teachers and coordinators of Geography courses**

Regarding the responses to the online questionnaires applied in this study, and to comply with the anonymity pact signed, we adopted a system of de-identification established through the use of pseudonyms under the rubric "Eagle 1", "Eagle 2", etc., assigned to each of the respondents.

The respondents were 3 (three) professors and 3 (three) coordinators of geography courses at the educational institutions surveyed, and 2 (two) different types of questionnaires were used, containing 8 (eight) questions for the professors working on the subject of environmental education and 6 (six) questions for the course coordinators, respectively. Given

the limited number of pages in this article, we'll mention some of the questions we used that we consider relevant to this discussion.

We asked professors and course coordinators: "How does environmental education dialogue or relate to geography education and teacher training?". In response, considering the contextual analysis, *Águia 2*, answered that: "Environmental Education would come to promote an integrative view of the relationship between society and nature and, at the same time, the impact of this relationship over the course of human history".

From the same perspective, *Águia 3* and *Águia 6* emphasized that

In my opinion, geography is one of the fields of knowledge that best dialogues with environmental education because environmental education is about laying the foundations for a new form of relationship between society and nature, but this new form of relationship can never happen without a thorough review of the relationships that society establishes among itself; in other words, the relationship between humans and nature is mediated by the relationship that humans establish among themselves, and there is no better field than geography to enable students to understand this intricate and complex network of interactions (*Eagle 3*).

Through theoretical and practical activities related to the subjects, and also through teaching, research and extension projects developed by professors, both those responsible for the subjects mentioned and other professors who work on the undergraduate geography course (*Eagle 6*).

It is possible to see from the respondents' statements that they are concerned about taking ownership of the subject, playing a leading role in the construction of knowledge at university, and that this can reverberate on the school floor. In addition, another question in the questionnaire referred to the relevance of Environmental Education to the training of professors and the teaching of Geography. *Águia 1*, *Águia 3* and *Águia 5* stressed that:

In a political context in which we are experiencing the persecution of social movements and of teachers who are considered indoctrinators, we realize that the relevance of the theme of environmental education must be increasingly present in the training of professors and in the teaching of geography [...] If we want to build a critical and emancipatory environmental education, we need a dialogue of knowledge that goes beyond the walls of universities and is discussed between educators and students in formal and informal spaces. It is essential that social, ethical, aesthetic and environmental issues are problematized in university curricula, contributing to the promotion of environmental justice and the value of the human person, for example, in an approach that dialogues with environmental education in Freirean theory and practice" (*Águia 1*).

In my opinion, environmental education is becoming increasingly important in the process of teacher training, since the accelerated changes of the

modern world require that teachers in training develop attitudes much more than they acquire knowledge (Adler 3).

More than just thinking about whether it's relevant or not, I'm very concerned about the way environmental education is taught. If, on the one hand, it has succeeded in raising environmental awareness in the population (which has been a great gain for environmental education so far), on the other hand, I see that the quality of this environmental awareness is still limited and lacks criticality (Eagle 5).

We also asked the professors how we can think of and/or propose strategies that address the theme of Environmental Education in teacher training. To this question, Águia 1 and Águia 3 replied that:

There is a need for partnerships between institutions, for example, to support research, teaching, and extension projects in which professors play a leading role in thinking about their teacher training, the process of teaching geography, and the curriculum that is implemented in basic education and in TI (Águia 1).

EE challenges us to think about strategies that can break away from classical teaching and learning processes. EE allows us to build processes where students can take the lead in action-research in the construction of knowledge, since EE only makes sense when it is rooted in a specific social context (Águia 3).

Among the answers obtained in the questionnaires, in addition to those presented above, the majority of respondents agree and emphasize the importance of working on the subject, reinforcing the need for a critical approach in a transversal and integrated manner. In this context, based on the survey, with a view to the curriculum and the existing syllabi within the disciplines that deal with the topic of environmental education, as well as the questionnaires used, we consider it appropriate to provide below an overview of curricular environmentalization, as we believe that this is a proposal that dialogues and contributes to the discussions in the context of the research carried out.

### **Curricular Environmentalization (CE) as a strategy for teaching Geography**

We understand that the premises of environmental education relate, among other things, to the important challenge of finding ways to enhance its contribution to basic and higher education. We have records of historical progress in the development of the subject, whether it be the presence of the curricular component in the Logical Sequence Charts (QSLs) in Geography courses, or the increase in the volume of research related to the subject and publications in journals.

Over time, the National Curriculum Guidelines (NCGs), the National Curriculum Guidelines for Environmental Education (NCGEEs) and the National Education Plan have experienced advances and setbacks through their normative documents. Considering this fact and the research we carried out, it was agreed to defend Curricular Environmentalization (CE) as a strategy and contribution to teaching. The understanding is that through this action, the theme of environmental education can expand the quality of teaching in the training courses of geography professors.

In this sense, the researcher Danielle Behrend, during her doctoral thesis, selected nine productions, including theses and dissertations from courses at different universities, which highlight the Biological Sciences, Pedagogy, and Chemistry courses when it comes to research on Curricular Environmentalization. In other words, we can see an increase in research on the term. Behrend (2020) believes that this growth is related to "the emergence of socio-environmental issues in undergraduate courses, given the requirements of the National Institute for Educational Studies and Research Anísio Teixeira (INEP)" (Behrend, 2020, p. 64).

It would be interesting to see this happen in the field of geography as well, to assess its potential as a strategy in undergraduate education. In this sense, a study by Rink (2014) found a predominance of growth in education and life sciences courses. With this information, there is a warning that the field of geography could increase its focus on this topic. Furthermore, with the growth of research on environmentalization, we may also see positive results in research related to socio-environmental issues. In this way, environmentalization presents itself as an opportunity to work on environmental education in a more comprehensive way within geography teacher education programs.

As mentioned at the beginning of this article, based on Rink (2014), curricular environmentalization is understood as a "process of curricular reorganization" that considers the proposal of interventions that integrate and relate socio-environmental themes to the content and pedagogical practices in the training space. This is in the sense that the initial training of professors finds its social, cultural, and economic context in environmental issues. Environmental education, with its socio-environmental character, is presented as a fostering element in the training of professors. The above also draws attention to the notorious evidence of the debate in relation to today's socio-environmental crisis. Considering this, it is necessary to strengthen our view of the problem and its ways.

Environmental education is also present in scientific research, in the training of professors, in the teaching of geography, in extension projects, and in various fields of

knowledge and knowledge production. The first way to understand these terms is based on Behrend (2020), in which environmentalization or curricular environmentalization (CE) "has been used to refer to the insertion of the environmental dimension" (Guimarães, 1995) in higher education institutions (HEIs). According to Behrend (2020), this is done by including environmental issues in the curricula and in the different segments of HEIs, with the aim of bringing about a change in attitudes, values, and practices.

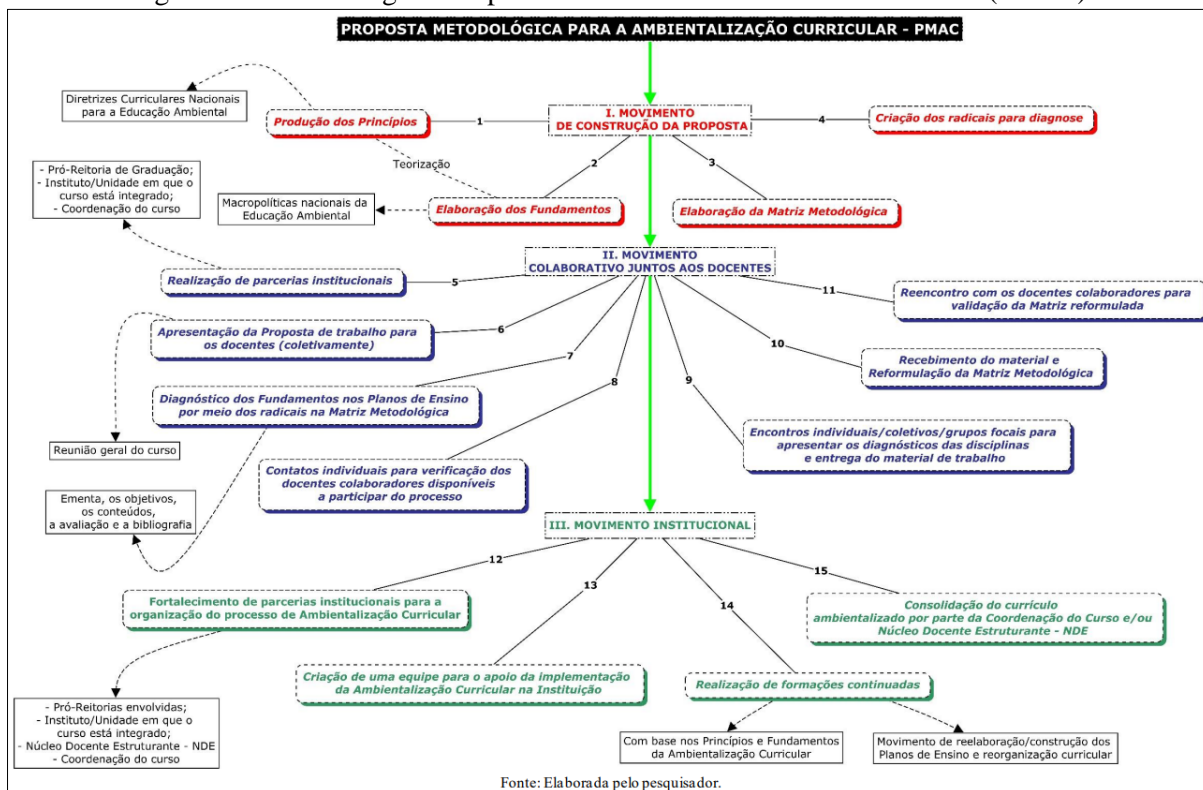
For Mota (2020, p. 59), the term Curricular Environmentalization is complex and covers the most diverse areas of knowledge, "[...] intervening in the relationships between individuals [...] in the higher education institutions to be environmentalized, in institutional policies, in research and extension projects, as well as in the methodological practices of teaching and knowledge construction". This is because it is not limited to superficial notions of the concept and specific approaches to the subject to which the term refers in this text. Therefore, environmental education is a broad subject that can be approached in many ways. It is inappropriate to approach it in a superficial and reductionist way. Behrend (2011) reinforces a pertinent observation: it is necessary to shorten the distance between higher education and basic education. It is also necessary to abolish the idea of a university/school hierarchy because this gives us the chance to listen to the subjects of both on an equal footing. By overcoming these obstacles, we can build a plural, diverse and horizontal structure.

We know that this is not a handbook or ready-made formulas for practical approaches, but the authors' observation is important. It appears that the ways of doing environmental education in practice are scarcer than the theoretical apparatus. In this sense, the inspiration for Mota's (2020) Methodological Proposal for Curricular Environmentalization (MPCE), which we are inspired by, came from the "Knowing the Sea" project carried out in Portugal, an initiative of Ocean Literacy. The author went beyond the principles and foundations contained in the project, which would be articulated for the basic education curriculum. By broadening the scope of the theme for use in higher education, the proposal had three movements, with a total of fifteen paths for its elaboration.

As can be seen in Figure 1, the MPCE, based on Mota (2020), consists of three main movements. The first is the construction of the proposal, which includes the NCGEEs in the production stage of the principles and the national macro-policies of environmental education in the elaboration of the foundations. Next, the movement of collaboration with teachers includes, among other things, institutional partnerships, the diagnosis of the foundations in the curricula, and meetings with teachers. The institutional movement, as the third movement, deals with the consolidation of the environmentalized curriculum, supporting the

implementation of curricular environmentalization, and also strengthening institutional partnerships to organize the curricular environmentalization process.

Figure 1 - Methodological Proposal for Curricular Environmentalization (MPCE)



Source: Mota (2020).

The above information on the MPCE is summarized here. It is therefore essential to read the proposal in its entirety to cover all the contexts, details, and better understanding. The origin of the proposal, according to the author, came about after the construction of some principles from the content analysis carried out by him in his thesis. Eight principles were identified, "considered necessary for the enhancement, operationalization, and institutionalization of Curricular Environmentalization in Higher Education" (Mota, 2020, p. 97). The principles of the methodological matrix were linked to the stages of the Training Pathway in Environmental Education (Mota; Kitzmann, 2017). See below, in Chart 4.

Chart 4 - Principles of Curricular Environmentalization in the stages of the Training Pathway in Environmental Education

| <b>PRINCIPLES OF CURRICULAR ENVIRONMENTALIZATION</b> | <b>STAGES OF TRAINING IN ENVIRONMENTAL EDUCATION</b> |
|--|--|
| 1. Aesthetic and environmental awareness             | Environmental awareness                              |
| 2. Bio-ecosystemic complexity                        | Environmental understanding                          |
| 3. Globalization and belonging to place              |  |
| 4. Sustainability                                    |  |
| 5. Socio-environmental justice                       | Environmental responsibility                         |
| 6. Climate change                                    |  |
| 7. Critical-reflective thinking                      | Environmental competence                             |
| 8. Eco-citizen ethics                                | Environmental citizenship                            |

Source: Mota (2020). Adapted from the Methodological Proposal for Curricular Environmentalization - MPCE: Integrating Environmental Education into Higher Education Curricula.

As shown in Chart 4, the principles are linked to the stages. In summary, the first principle of curricular environmentalization is linked to the stage of environmental awareness of the training pathway in environmental education. It concerns the sensitization of subjects and the improvement of their perceptions, since "individuals must be sensitized to want to transform the environmental problems in the places where they are integrated" (Mota, 2020, p. 98).

The second, third, and fourth principles are related to the second phase of the training process. Environmental Understanding is linked to "responsibility and competence in actions to build a sustainable society (Mota, 2020, p. 98)". The next stage in the diagram is Environmental Responsibility, which is linked to Principles Five and Six. Here, the reference is recognizing levels of responsibility in the face of socio-environmental justice. Then there is Principle Seven, which focuses on environmental literacy and concerns decision-making, critical thinking, and action. The author points out that "one cannot simply recognize responsibility in the face of facts, but must put it into practice (Mota, 2020, p. 98)".

Principle number eight, which is the last one, refers to the level called eco-citizen ethics. It would be a reinforcement that "requires the ability of subjects to act in social decisions and practices". The aim is to rescue rights and promote a socio-environmental ethics that, according to the author, "is capable of breaking with the dual paradigm that separates nature and society (Mota, 2020, p. 98)".

Continuing our reading, the third work is the doctoral thesis defended by Professor Elisângela de Felipe Rodrigues (2022), entitled "Critical Environmental Education in the Training of Geography Professors through Curricular Environmentalization ". The research sought to understand, through the process of Curricular Environmentalization , how it would be possible to include Critical Environmental Education in the Geography program at the Universidade Federal do Rio Grande (UFRG), as well as its contribution to the training of professors.

The work is related to the principles of Mota's (2020) Methodological Proposal for Curricular Environmentalization (MPCE) seen above. The information was provided in chapter eight, in the subtopic "8.1 Perceptions of teacher educators about environmental education", where the author analyzed the interviews conducted with the professors and provided narratives that contribute to this research proposal.

First, the author brings up Freire's perception of reflection on practice in teacher education through dialogue: "[...] through reflection on practice, the naive curiosity that recognizes itself as such becomes critical" (Freire, 2016, p. 40). That's why we agree with the author that moments of critical reflection on their practice are fundamental in the continuous formation of professors.

From the same perspective, Loureiro (2019) defends a critical, dialogical and problematizing environmental education, understanding that the process of Environmentalization can be considered from these concepts in the training of geography professors. Moreover, Rodrigues (2022) points out that:

[...] The initial training of professors carried out in the Geography course, by seeking to mainstream Critical Environmental Education, contributes to qualifying Basic Education because, by linking Environmental Education to Geography to understand the reality of the school-place and the geographical space, it helps in the development of research by professors and students, taking into account their experiences and their knowledge about the place they live in. In addition, Critical Environmental Education articulated with Geography can enhance critical and dialogical reflection (Rodrigues, 2022, p. 206).

Here we see the possibility of working with environmental education, considering the experiences of professors and students in relation to the concept of place and geographic space. Indirectly, the socio-environmental perspective will be covered, as it includes the natural dimension and the social dimension to approach the concept of geographical space. Thus, the subject of environmental education, in addition to dialogue, allows reflection on the reality addressed. The author concludes that "for curricular Environmentalization to take



place in teacher training, it is necessary to weave relationships with the field of knowledge to which teachers belong" (Rodrigues, 2022, p. 209). In other words, to get a sense of how environmental education is understood and how it can be built with the collective.

Considering the points presented, we realize the relevance of the contributions made by the ideas of the authors. For this reason, we believe and reinforce the idea that Curricular Environmentalization can qualify the relationship between critical environmental education and professorial training. We also understand that it has the potential to contribute to a transversal theme in the face of a curriculum characterized by compartmentalization. Higher education benefits from the training of professors, and basic education benefits because geography is taught in schools.

Therefore, we understand that the Curricular Environmentalization can be presented as a possibility to work on environmental education in a transversal way, thus contributing qualitatively to the training of professors and, consequently, to the teaching of geography. In addition, the inclusion of environmental knowledge (Curricular Environmentalization) must be present throughout the Logical Sequence Chart (LQS). In this way, we can have more contact with environmental education in geography courses in the training of professors.

### **Final considerations**

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The proposal presented here was developed by focusing on the issues of professorial training, environmental education, and geography education. The theoretical framework allowed us to make important reflections and broaden our knowledge of the issues in question. The bibliographic survey provided a conceptual overview of the topics, and the content analysis extracted elementary information to arrive at some results.

About the pedagogical projects of the courses studied, we note that all of them include environmental education in their curricular proposals. We found that there is an intention to work on the subject, taking into account the principles and objectives proposed for the subject. And although this is a positive point, we believe that it is possible to adopt strategies to improve its quality.

Regarding the relevance of environmental education, it is considered to promote critical and reflective thinking, contributing to geography from the perspective of transversality to discuss the training of professors, the curriculum, and the teaching of geography. Working with an interdisciplinary approach does not exclude other alternatives;

on the contrary, it broadens the horizon of possibilities for dialogue within one's own field of knowledge and with others.

In addition, the course of the proposal presented us with findings and some answers during the research process. The content analysis and the reading of some authors led us to the conclusion that Curricular Environmentalization allows us to broaden the horizon from the perspective of environmental education. Therefore, we argue that Curricular Environmentalization is a strategy for addressing the issue of environmental education in the training of professors, based on the mentioned authors.

It is known that Curricular Environmentalization is carried out through the inclusion of environmental issues in curricula. In addition to the teaching segment, the construction of knowledge includes the research and extension segments. However, we emphasize that Curricular Environmentalization goes beyond the curriculum, it must be internalized by the collective and also implies institutionalization in higher education. In addition, it implies the reduction of distances between basic and higher education through dialogue between its agents.

Therefore, the Environmentalization also implies an attempt to get closer to concepts related to the environment and to study more and more socio-environmental issues in formal and non-formal spaces, contributing to the development of critical and transformative mentalities. With this in mind, and based on the authors mentioned above, we also argue that critical and transformative environmental education must be present in the pedagogical-political projects of schools. Likewise, in the pedagogical projects of higher education courses, especially in the training of professors.

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Received for publication on April 23, 2024.

Approved for publication on June 29, 2024.

Published on July 05, 2024.