

FROM THE CONSTRUCTION OF THE FIELD TO INTERDISCIPLINARITY IN ENVIRONMENTAL EDUCATION: THE CASE OF UNAM

DA CONSTRUÇÃO DO CAMPO À INTERDISCIPLINARIDADE NA EDUCAÇÃO AMBIENTAL: O CASO DA UNAM

DE LA CONSTRUCCIÓN DEL CAMPO A LA INTERDISCIPLINARIEDAD EN LA EDUCACIÓN AMBIENTAL: EL CASO DE LA UNAM



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How to reference this paper:

RESÉNDIZ ROMERO, J. G. From the construction of the field to interdisciplinarity in environmental education: The case of UNAM. **Revista Ibero-Americana de Estudos em Educação**, Araraquara, v. 18, n. 00, e023168, 2023. e-ISSN: 1982-5587. DOI: <https://doi.org/10.21723/riace.v18i00.16195>



| **Submitted:** 26/01/2022
| **Revisions required:** 02/05/2023
| **Approved:** 16/09/2023
| **Published:** 30/12/2023

Editor: Prof. Dr. José Luís Bizelli
Deputy Executive Editor: Prof. Dr. José Anderson Santos Cruz

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ABSTRACT: The purpose is to establish mechanisms for constructing the field of Environmental Education (EE) and move towards the interdisciplinarity of EE knowledge, addressing the necessary skills for analysis, diagnosis, participation, and intervention in the population. The objective is to raise awareness in society about the need for a change in the human-nature relationship, considered a dilemma in the context of the civilizational crisis: 1) The transition is made towards a knowledge that integrates, unifies, and considers totality to establish connections between different disciplines in the face of the pollution phenomenon; 2) Given the complexity of Environmental Education (EE), the persistence of the same inertia and logic is observed: the partialization and compartmentalization of studies. The questions arising from this context are as follows: 1) What are the incentives for interdisciplinary EE? 2) What is the internal mechanism occurring in postgraduate teachers in Mexico? and 3) What are the interdisciplinary bridges within it?

KEYWORDS: Civilization crisis. Environmental Education. State of the art. Postgraduate thesis.

RESUMO: *O propósito é estabelecer os mecanismos para a construção do campo da Educação Ambiental (EA) e transitar em direção à interdisciplinaridade dos saberes de EA, abordando os conhecimentos necessários para análise, diagnóstico, participação e intervenção na população. O objetivo é conscientizar a sociedade sobre a necessidade de uma mudança na relação do ser humano com a natureza, considerada um dilema no contexto da crise civilizacional: 1) A transição é feita em direção a um conhecimento que integra, unifica e considera a totalidade, a fim de estabelecer conexões entre as diferentes disciplinas diante do fenômeno da poluição; 2) Dada a complexidade da Educação Ambiental (EA), observa-se a persistência da mesma inércia e lógica: a parcialização e compartimentalização dos estudos. As questões derivadas desse contexto são as seguintes: 1) Quais são os incentivos para a EA interdisciplinar? 2) Qual é o mecanismo interno que acontece nos professores de pós-graduação no México? e 3) Quais são as pontes interdisciplinares nele?*

PALAVRAS-CHAVE: *Crise da civilização. Educação Ambiental. Estado da arte. Tese de pós-graduação.*

RESUMEN: *El objetivo es determinar los mecanismos de la construcción del campo de la Educación Ambiental (EA) y el tránsito hacia la interdisciplinariedad de ella saberes y conocimientos para realizar: análisis, diagnóstico, participación e intervención en la población para construir conciencia sobre el cambio en la relación del ser humano con naturaleza, una disyuntiva en el marco de la crisis civilizatoria: o 1) Cambiamos a un conocimiento que integre, aglutine y tome en cuenta la totalidad para generar puentes entre las diferentes disciplinas ante el fenómeno de la contaminación o 2) Ante la complejidad de la EA se sigue bajo la misma inercia y lógica: parcialización y compartimentalización de los estudios Preguntas derivadas de esto son: 1) ¿Cuáles son los incentivos para la interdisciplina en la EA? 2) ¿Cuál es el mecanismo interno que sucede de los profesores de posgrado en México? y 3) ¿Cuáles son los puentes interdisciplinarios en él?*

PALABRAS CLAVE: *Crisis civilizatoria. Educación Ambiental. Estado del arte. Tesis de posgrado.*

Introduction

The research work finds one of its manifestations in theses, from which 10 texts were selected to exemplify the trajectory from the construction of the Environmental Education (EE) field to interdisciplinarity. This research is embedded in the activities of the Mexico chapter of the Collective Network of Researchers in Higher Environmental Education in Latin America and the Caribbean (EArte-ALyC), a knowledge network that encompasses postgraduate theses directly related to EE in thematic and content terms. The texts analyzed in this study result from a selection by EE discipline, considering subthemes, the academic trajectory of authors post-graduation, and their roles as educators and researchers in forming EE professionals. The development of EE, as well as the theses in question and future ones, will be guided by leveraging existing gaps in the system (NOVO, 2020), a phenomenon similar to that observed in interdisciplinarity.

On the other hand, the same author highlighted that, historically, environmental educators in Latin America have demonstrated resilience in the face of external conditions. Therefore, it is imperative to emphasize that the development of Environmental Education (EE) in Latin America faces at least two challenging conditions: seeking institutional termination while dealing with external pressures. In this historical context, insights from the theses of the National Autonomous University of Mexico (UNAM) are considered for the development of EE in Mexico. In the initial phase of this development, each contribution and its challenges, as detected by the selected theses, are cataloged.

To establish the presence of EE, UNAM is analyzed at three levels: at the first micro-social level, the second meso-social level in Mexico, and the third macro-social level in Latin America. This allows for the measurement of EE's participation in the context of all careers offered at each level, emphasizing the need for interaction between the three levels. The justification for this differentiation lies in the fact that the state of the art extends beyond bibliographic analysis, research abstracts, or inventories of academic production on a topic, and it does not limit itself to characterizing academic and scientific production.

Suppose the general objective is to determine the mechanisms for building the field of Environmental Education (EE) and the transition to interdisciplinarity. In that case, it is essential to identify the specific mechanisms for constructing this field and transitioning to interdisciplinarity in Environmental Education (EE).

The specific objectives are: 1) Analyze the 10 UNAM postgraduate theses to determine how the field of EE is constructed in Mexico; 2) Study the historical development of EE

knowledge through its theses; and 3) Analyze the need for interdisciplinarity to continue the development of EE in Mexico.

In Mexico, the organization of the *Congresso Nacional de Pesquisa Educacional* (National Congress of Educational Research, COMIE) conducted a State of Knowledge for Research in Environmental Education, in which (GONZÁLEZ; BRAVO, 2008) selected three stages in 2003, as indicated below:

- ✓ First stage (1984-1989): Origins of the field and initial research on Environmental Education.
- ✓ Second phase (1990-1994): Growth and diversification of research in Environmental Education.
- ✓ Third stage (1995-2002): Consolidation of the research field in Environmental Education, with a focus on two authors of selected theses.

Additionally, the following is observed:

- ✓ Fourth stage (2003-2005): Consolidation of Master's degrees and emergence of new programs, including those in Education for Sustainable Development.
- ✓ Fifth stage (2005-2014): Decade of Environmental Education decreed by the UN and its impact on the overall landscape of EE, influencing postgraduate programs.
- ✓ Sixth stage (2015-2030): Implementation of the Sustainable Development Goals with an impact on Environmental Education in universities and postgraduate programs.

While the State of the Art in EE demands various previous works, one is the state of knowledge in EE. Just as the state of knowledge requires numerous thesis works, the first one, in 1992, stands out, addressing EE as an emerging field within pedagogy.

Currently, it finds itself in an emerging stage in the overall environmental context and, at a more specific level, in Environmental Education, becoming necessary due to the complexity of the phenomenon to be addressed in its trajectory and development.

Journey of Environmental Education to a New Name: Education for Sustainable Development

Em 1992, na Universidade Nacional Autônoma do México (UNAM), surgiu a primeira dissertação de mestrado dedicada à Educação Ambiental (EA), intitulada “*Educación Ambiental: Um Novo Campo Pedagógico no Quadro de Prioridades Globais* (Environmental Education: A New Pedagogical Field in the Framework of Global Priorities)” authored by Edgar González Gaudiano. Simultaneously, nationally, the Master's in Environmental Education was established in 1993 at the National Pedagogical University (UPN) and, in 1994, at the University of Guadalajara (UdeG), as stated:

The Master's in Environmental Education was conceived in the distance learning modality and originated in the proposals emanating from the I Ibero-American Congress on Environmental Education, held in Guadalajara, Jalisco, in 1992. The project for the creation of the Master's was developed in 1994 by renowned experts from different Ibero-American countries from the universities of Guadalajara and the Autonomous Metropolitan University-Xochimilco (Mexico); Mato Grosso, Brazil; Autonomous University of Madrid (Spain); State Distance and National Autonomous University (Costa Rica); Mar del Plata (Argentina); National of Colombia (Colombia); Playa Ancha (Chile); Experimental Libertador Pedagogical Institute (Venezuela), in addition to specialists from the Higher Pedagogical Institute of Technical and Professional Education of Cuba and the United Nations Environment Programme (UNEP) (ARIA, 2000, our translation).

The group that originated the *I Congresso Ibero-Americano de Educação Ambiental* (I Ibero-American Congress on Environmental Education) has diverse approaches, resembling the group that makes up the Collective Network of Researchers in Higher Environmental Education in Latin America and the Caribbean (EArte-ALyC). In the I Ibero-American Congress and in EArte-ALyC, there is a common denominator among their members, who, despite different approaches, participated in the construction of the Master's in Environmental Education at UPN and UdeG.

Internationally, in 1992, the World Summit on Environment and Development took place in Rio de Janeiro, where the three axes of Gonzalez's thesis (1992) were addressed: Environmental Education, a new pedagogical field, and global priorities.

The author has a nationally and internationally recognized academic career, having led the state of knowledge in Environmental Education at the *Congresso Nacional de Pesquisas Educacionais* (National Congress of Educational Research, COMIE). He is a professor at the University of Veracruz and UNAM, where he played the role of educator and researcher in environmental education.

The general objective of his thesis is divided into three parts:

- Strengthen the field of Environmental Education in Mexico, encompassing both formal and non-formal/informal education.
- Enhance the professional capacity of environmental educators in Mexico.
- Foster collaborative ties with similar organizations abroad and international institutions to implement joint projects of mutual interest.

This thesis does not have an abstract but presents an interesting peculiarity. Graduate theses are following a more similar approach to natural sciences, both in terms of format and evaluation. Dr. Ángel Díaz Barriga mentions that "representatives of the social sciences request to be evaluated by CONACYT with journals that serve to evaluate those of natural sciences," including databases, portals, and platforms such as ELSEVER, Journal Citation Report (JCR), among others. At the same time, there is resistance to the positivist method.

Given the fundamental role of this thesis in Environmental Education within the context of the master's in pedagogy, commencing with the construction of the field of study and research is of utmost importance. This pertains not only to the content of the work but, as observed, has triggered additional events.

The establishment of a conceptual and operational framework for Environmental Education is crucial, aiming to redirect the activities carried out in the country towards common purposes with approaches adapted to existing characteristics and needs. Other outcomes resulting from this thesis include: Promotion of the establishment of networks of environmental educators to facilitate the exchange of experiences and mutual support in the development of educational actions across various sectors and population groups and encouragement of the creation of a national association of environmental educators, representative of different regions and states of the country, as well as various fields of activity. This association aims to coordinate efforts, increase credibility and the social base of projects, strengthen management capacity before donor agencies and institutions, and form a consensus to address certain lines of action and identified priorities.

The National Association of Environmental Education was founded in 2000 as a civil alliance of professionals in the field, with the participation of Dr. González Gaudiano as one of the founders. The dissemination of the conceptual and operational framework intersects with the development of Environmental Education, as described below.

Arias's thesis (ARIAS, 2000), titled “*A Profissionalização da Educação Ambiental no México* (The Professionalization of Environmental Education in Mexico)” for the Master's degree in Pedagogy, centers its argument on the relationship between the features and fields of teacher professionalization, expressed in the Master's degrees, diplomas, and specializations in Environmental Education in Mexico. The priorities of Environmental Education are hierarchical, correlating directly with the construction of the field and the professionalization of teachers. Two distinct fields were identified: that of Environmental Education (GONZÁLEZ, 1992) and, epistemologically, that of the professionalization of environmental educators (ARIAS, 2000).

Given its objective:

To provide a preliminary overview of the processes of professionalization of environmental education in Mexico since the 1980s, with the aim of locating some contextual, conceptual, and methodological elements guiding the conception and implementation of curricular proposals aimed at the training, updating, and specialization of professionals in the field of environmental education (ARIAS, 2000, p. 97, our translation).

To contribute to the specialization of professionals in the field of Environmental Education, Arias's work continues the line of inquiry from the thesis of Edgar Gonzales Gaudiano. Thus, both theses demonstrate the development and dynamic of Environmental Education in postgraduate studies in Mexico. However, it is crucial to recognize that the dynamics of the economy and environmental deterioration are fast-paced, while the creation of a study program in all areas requires lengthy processes of planning, implementation, evaluation, and didactic operationalization.

Given the previous procedures of the economy, the environment, and the creation of new postgraduate programs, the responses provided by academia tend to be slow, partial, and reactive, occurring after economic and environmental processes. It is imperative to recognize that the theses on Environmental Education by students constitute spaces for debate, reflection, and self-analysis within academia regarding their work and its impact on the environment.

The following thesis is titled “*Educação Ambiental Superior na América Latina: Como a Interdisciplinaridade se Reflete nos Currículos de Mestrado?* (Higher Environmental Education in Latin America: How Interdisciplinarity is Reflected in Master's Curricula?)” and was elaborated by María Luisa Eschenhagen Durán in 2005 at the Faculty of Philosophy and Letters with a Doctoral degree in Latin American Studies (ESCHENHAGEN, 2005). The text

addresses environmental education at various levels that self-designate as interdisciplinary, suggesting that there is a gap between discourse and reality (ESCHENHAGEN, 2007).

A first review will serve to see, as a whole, in which areas environmental education is being offered, at which levels - specialization, diploma, master's, doctorate, others - and in which countries, also looking at those claiming to be interdisciplinary. This will allow us to assess, for example, to what extent international guidelines have been put into practice. This panorama will enable us to glimpse both the existing gaps and potentialities in environmental education in Latin America and the potential to build a new worldview that allows for a more harmonious coexistence with nature (ESCHENHAGEN, 2007, p. 7, our translation).

Continuing with the analysis, the international guidelines proposing interdisciplinary environmental education and assessment have not been implemented, revealing weaknesses and strengths, as well as gaps and areas under development. Thus, it becomes imperative to develop a methodology consistent with the challenges presented by the theses to conduct appropriate analysis and evaluation.

Methodology of this article

Based on the socio-critical paradigm grounded in Freirean social criticism, with orientation towards social transformation mediated by individuals' participation and their awareness of belonging to their communities, the group belonging to this community has specific interests that construct knowledge, transitioning from a passive and receptive being to an active and participative being. This paradigm aims to overcome the reductionism, mechanism, and conservatism present in some currents of social sciences, such as dogmatic Marxism and functionalism, both of which are surpassed by the socio-critical paradigm with a profound pedagogical focus seeking this transition and self-reflection in pedagogy (ALVARADO; GARCÍA, 2008).

This study aims to examine the development of the thesis as evidence of the relationship between academia and society, highlighting significant elements such as: 1) investigation of the roots of the problem, 2) evaluative character, 3) critical self-reflection, 4) questioning who benefits from the current state of affairs, and 5) identification of those who could benefit from changes in this context.

The adopted methodology follows the socio-critical paradigm and aligns with critical pedagogy, exploring the roots of the civilizational crisis, particularly in the environmental context in relation to education. The study detects the cause-and-effect relationship between

elements of Environmental Education (EE) and knowledge development, subsequently questioning who benefits from the current state of affairs, encompassing fragmented knowledge, global pollution, and the existing educational model.

The research employs methodological triangulation, utilizing three data collection and systematization techniques with a mixed-method approach. Methodological triangulation, involving the use of various methods, data sources, theories, and research approaches related to the study, encompasses different types, including a) data triangulation, b) researcher or analyst triangulation, c) theoretical triangulation, d) conceptual triangulation; and e) multiple triangulation. This approach is essential for conducting interdisciplinary work, serving as a relevant consideration for researchers investigating interdisciplinarity.

The selection criteria for postgraduate theses in Environmental Education (EE) at the National Autonomous University of Mexico (UNAM) were based on the authors' professional trajectory in EE, the impact of their teaching work in different institutions, and their prominent role in the development of EE in Mexico through subsequent research.

Table 1 – Selected theses illustrating the trajectory from the construction of a new pedagogical field to the Interdisciplinarity of Environmental Education

Number.	Title	Author / Teaching staff / Degree	Year
1	<i>Educação Ambiental: Um Novo Campo Pedagógico no Quadro das Prioridades Globais</i>	Edgar González Gaudiano / Faculty of Philosophy and Letters / Master's in Pedagogy.	1992
2	<i>A profissionalização da Educação Ambiental no México.</i>	Miguel Ángel Arias Ortega / Faculty of Philosophy and Letters / Master's in Pedagogy.	2000
3	<i>Educação Ambiental Superior na América Latina: Como a interdisciplinaridade se reflete nos currículos de mestrado?</i>	Eschenhagen Durán, Annette María Luisa / Faculty of Philosophy and Letters / Ph.D. in Latin American Studies	2005
4	<i>Ensino de Ecologia e Educação Ambiental, Um Estudo de Caso no Bacharelado Universitário</i>	José Efraín Cruz Marín / Faculty of Sciences / Master's in Biological Sciences	2007
5	<i>Representações do ambiente dos alunos do Bacharelado em Educação Básica</i>	Raúl Calixto Flores / Faculty of Philosophy and Letters / Ph.D. in Pedagogy	2007
6	<i>Educação ambiental. Representações Sociais de Professores da Educação Básica e suas Implicações Educacionais</i>	Esperanza Terrón Amigón / Faculty of Philosophy and Letters / Ph.D. in Pedagogy.	2008
7	<i>A Dimensão Ambiental e sua Incorporação ao Currículo da Universidade Nacional Autónoma do México, (1991-2012)</i>	Maria Teresa Bravo Mercado. / Faculty of Political and Social Sciences / Master's in Sociology.	2013
8	<i>Pesquisa em Educação Ambiental. Uma análise a partir das vozes de pesquisadores mexicanos</i>	Claudia Angélica Escobar López / Faculty of Philosophy and Letters / Master's in Pedagogy	2016

9	<i>Formando e conciliando trajetórias: o trabalho dos alunos do Mestrado em Educação Ambiental</i>	Laura Leonor Contreras Camargo / Faculty of Psychology / Ph.D. in Psychology	2018
10	<i>Educação Ambiental no Ensino Médio: Estudo e Ação sobre Problemas Ambientais</i>	Mara Paola Yrene Alcaraz / National School of Higher Studies (Unit Morelia) / Master's in Teaching for Higher Secondary Education (Social Sciences)	2020

Source: Authors' elaboration based on the UNAM Theses database.

The presented table provides a comprehensive overview of the theses, including title, author, and year of publication. The development of these theses outlines priorities over the period from 1992 to 2020. It is important to highlight that these theses are in the public domain and play a significant role in guiding the consolidation of the study of Environmental Education (EE) in Mexico and addressing its challenges.

As for the results: Theses that mark a guiding thread in the consolidation of Environmental Education with the challenges of its interdisciplinarity

In 2007, a thesis titled “*Ensino de ecologia e educação ambiental, um estudo de caso no bacharelado universitário do Mestrado em Ciências Biológicas* (Teaching Ecology and Environmental Education, a Case Study in the University Bachelor's Degree of the Master's in Biological Sciences)” was elaborated. The aim of this thesis is to suggest the need to develop a critical sense regarding history, culture, and environmental issues, integrating these elements into an entity and consciousness necessary to propose curriculum groups in interaction with the campus green areas. It also provides an experiential and existential sense to the biology course for high school students prepared for higher education.

In the conclusions, the importance of training biology professionals for EE as an intrinsic part of their education is emphasized, rejecting the extracurricular or independent approach to professionalization. This work is relevant for positioning itself in the debate on educational, social, and environmental crises. It also discusses the epistemology of EE, pointing out some signs of rupture in technical-scientific training (CRUZ, 2007).

Professor Fermín Cruz Marín, who works at the University of Mexico City (UACM) in the Master's in Environmental Education, grounds his thesis work in environmental epistemology. In this context, he manages to articulate the emergence of an environmental crisis with the importance of the subject mediating their reality through knowledge in an educational environment.

In 2007, the thesis titled “*Representações do Ambiente dos Alunos da Licenciatura em Ensino Primário* (Representations of the Environment by Primary Education Students)” was presented by Dr. Raúl Calixto Flores from the Faculty of Philosophy and Letters, aiming to obtain a Doctorate in Pedagogy. Dr. Raúl Calixto Flores is a National Pedagogical University (UPN) professor teaching the Master's in Environmental Education aimed at Basic Education teachers. The author's proposed thesis, which analyzes the Social Representations (SR) of environmental and education teachers, seeks to determine the scope and limits of Environmental Education (EE), considering that these SRs manifest in society through social movements.

The theoretical references adopted by Dr. Raúl Calixto Flores in the field of Environmental Education include thinkers such as Víctor Manuel Toledo, Enrique Leff, Suave, María Novo, Edgar González Gaudiano, and Teresa Bravo. In terms of sociology, he considers Pierre Bourdieu, Jean Claude Passeron, McLuhan, Manuel Castels, and Habermas. Regarding social representations, Serge Moscovici, Jodelet, Banchs M. A., Alexandre, A., Andrade J. H., Arruda A., Cote P., Dal-Farra R., Fernández-Crispín A., J. Benayas, Del Alamo, Ferreira R., Fontecilla A. I., Goya E.M., Joana L. C., Molfi E., Ponte C. e S. Concesa, and Reigota Marcos are considered. This theoretical foundation is crucial to situate the work in the context of the development of Environmental Education in Mexico.

In 2008, the thesis titled “*Educação Ambiental. Representações Sociais de Professores de Educação Básica e suas Implicações Educacionais* (Environmental Education. Social Representations of Basic Education Teachers and their Educational Implications)”, was presented by Dr. Esperanza Terrón Amigón from the Faculty of Philosophy and Letters to obtain a Doctorate in Pedagogy. The author is a research professor in the Master's in Educational Development at UPN, also being level I of the National System of Researchers (SNI). She collaborated on publications with Raúl Calixto Flores, sharing the same research line.

The main objective of this thesis is to understand the social representations that teachers have constructed about environmental education, their sources, and their influence on the school environment in light of developmental learning (AD) practices and approaches. The author advocates for the need for reflection on Environmental Education in teaching practice from a socio-pedagogical approach in order to provide a pedagogical foundation for Environmental Education in response to global challenges.

The title of Chapter V, “*Educação Ambiental: Do Conhecimento Especializado ao Conhecimento do Senso Comum* (Environmental Education: From Specialized Knowledge to

Common Sense Knowledge)”, is intriguing, suggesting three crucial elements in Environmental Education (EE): 1) the need to deconstruct the object of study and acquired knowledge up to the present moment; 2) the importance of adopting a critical attitude towards the specialization of knowledge; and 3) the relevance of revaluing fundamental principles. All these aspects are essential to assess the trajectory from the construction of the field of EE to the understanding of interdisciplinarity.

There is a cage of modernity's rationality whose axis is the income of capital, globalized from its economic sphere to its cultural sphere, passing through the economic, social, ideological, and historical realms, and the relationship of human beings with nature is not an exception but a constant. In terms of Leff (2008, p. 4, our translation), the role of EE is faced with the "anguish of the great ecological cataclysm and the discredit of the effectiveness and morality of the market."

In 2013, the thesis titled “*A Dimensão Ambiental e sua Incorporação no Currículo da Universidade Nacional Autónoma do México (1991-2012)* (The Environmental Dimension and its Incorporation into the Curriculum of the National Autonomous University of Mexico (1991-2012))”, was completed, presented by Professor María Teresa Bravo Mercado from the Faculty of Political and Social Sciences to obtain a Master's degree in Sociology. The aim of this research is to address the environmental dimension at UNAM as a central axis, incorporating it into conceptual and methodological perspectives through the transversal modification of the university curriculum regarding environmental issues in education.

Therefore, the thesis “*A visão das relações entre sociedade e natureza* (The Vision of the Relationships between Society and Nature)”, has been enriched by symbolic forms and criticism of the environmental situation. The mechanistic view of the world, developed for several centuries, has fundamentally contributed to the formation of this perspective, introducing objectivism and mechanism into the life of Western society, leaving indigenous groups isolated and, consequently, the university behind. This resulted in two consequences: materialism, which considers only the physical material and the objective as existing, and determinism, which argues that everything has a physical cause, including consciousness. Objectivism overlooked realities inaccessible through experimentation, limiting the possibilities of knowledge of symbolic realities crucial for the forms of society's relationship with nature and among human beings. The mechanistic view fragmented knowledge, generating a fragmented perspective of reality manifested in disciplines or fields of knowledge. This approach has been central to the interpretation and intervention in reality, which is why the

study of the biosphere has been conducted to destructure it, in contrast to an approach that requires structuring and integration (BRAVO, 2013).

Professor Tere Bravo is a faculty member in the postgraduate program in pedagogy and the undergraduate pedagogy course. Additionally, she serves as the coordinator of the EArte México chapter, is a researcher at the Institute for Research on University and Education Studies (ISSUE), and coordinates the Professional Update Diploma in Interdisciplinary Research in Environmental Education for Sustainability at UNAM. Professor Bravo is a member of the National Academy of Environmental Education A.C. (ANEA), a promoter and founder of the “*Consórcio Mexicano de Programas Ambientais Universitários para o Desenvolvimento Sustentável* (Mexican Consortium of University Environmental Programs for Sustainable Development)” (Complexus) and participates in the Mexican Council of Educational Research A. C. (COMIE).

In 2016, the thesis titled “*Pesquisa em Educação Ambiental, uma análise baseada nas vozes de pesquisadores mexicanos* (Research in Environmental Education, An Analysis Based on the Voices of Mexican Researchers)” was presented by Claudia Angélica Escobar López, aiming to obtain a master's degree in pedagogy from the Faculty of Philosophy and Letters, where the author works at the *Universidade Iberoamericana*. The overall objective of the work was to understand how the field of research in environmental education emerged at the national level, analyze the progress achieved, and propose actions to strengthen this progress (ESCOBAR, 2016).

The acknowledgments in this thesis are directed towards notable figures, including Antonio Fernández Crispín, Édgar González Gaudiano, Esperanza Terrón Amigón, Raúl Calixto Flores, Teresa Bravo Mercado, and Miguel Ángel Arias, among others. This coincidence and consistency are elements that support the analysis of six of these authors in this work, demonstrating that research in Environmental Education (EE) has had a multidisciplinary influence. In one way or another, these individuals played a significant role in the development of EE in Mexico.

In 2018, the thesis titled “*Formando e conciliando trajetórias: o trabalho dos alunos do Mestrado em Educação Ambiental de Laura* (Shaping and Reconciling Trajectories: The Work of Students in Laura's Environmental Education Master's)” was presented by Laura Leonor Contreras Camargo from the Faculty of Psychology, aiming to obtain a Ph.D. in Psychology. In the conclusions, the thesis is grounded in the reconciliation between individual and institutional trajectories.

The trajectory of the Environmental Education Master's student (TEMaEA) consists of four stages: formation, candidacy, student, and postgraduate. At each stage, they establish relationships to reconcile their other trajectories to achieve various personal goals (CONTRERAS, 2018, p. 144, our translation).

These four stages are common to all Master's programs; however, the author highlights specific elements in the Master's in Environmental Education (EE) at the National Pedagogical University (UPN). The students' trajectory is considered a challenging path, where personal and institutional interests come into play and are mediated by human sensitivity and institutional influence. Both are tested, resulting in non-homogeneous but differentiated outcomes. The aim of this work is to investigate the mechanisms of constructing the trajectories of Master's students in EE, conducting analysis, discussion, and interpretation of the obtained data.

In the year 2020, the thesis titled "*Educação Ambiental em Nível Médio: Estudo e Ação em Problemas Ambientais* (Environmental Education in High School: Study and Action on Environmental Problems)" was presented by Mara Paola Yrene Alcaraz, aiming to obtain a Master's degree in Teaching for High School (Social Sciences) from the National School of Higher Studies (Unit Morelia). This thesis aims to evaluate the knowledge, values, and skills acquired by high school students to address environmental problems in their school context (YRENE, 2020, p. 21-22).

Assuming that the didactic sequence is "a series of learning activities that have an internal order among them" (DÍAZ BARRIGA, 2013, our translation), in this context, this internal order relates to: 1) the student previously understanding the environmental problem; 2) relating the environmental issue to the student's new knowledge in EE, and 3) relating previous experiences of environmental problems to their development. Thus, the aim is not only to propose routine and monotonous activities but also actions that are meaningful for the student (DÍAZ BARRIGA, 2013).

Learning and its teaching emerge as a central theme throughout these 10 theses related to EE, delineating paths and addressing internal and external mechanisms for construction, configuring a pending task in the Interdisciplinarity of Environmental Education.

Final considerations

1 - The relationship between internal and external mechanisms interacts in the process of constructing a new field of interdisciplinarity in Environmental Education (EE), addressing its current state with challenges, achievements, and advances, outlining a broad landscape of action in EE.

2 - The trajectories outlined by these 10 perspectives are shaped by the socio-cultural and economic context, defining and influencing their approach. These paths range from Environmental Education (EE) being considered a new field in pedagogy, the professionalization of environmental educators, the presence of EE in Latin America, and the integration of EE into Master's curricula. Furthermore, they encompass the inclusion of EE in undergraduate programs, the study of Environmental Education (EE) and Social Representations (SR), the incorporation of the environmental dimension into the UNAM curriculum, research conducted by scholars in EE, and the reconciliation of student trajectories in Master's programs in EE and high school. These diverse approaches were configured by the context in which they were conceived and the authors' previous experiences.

3 - The selection was multifaceted, resulting in various emphases, nuances, degrees, and perspectives from different areas of higher education, all addressing the same object of study in EE. The result is, therefore, multifaceted, addressing the civilizational crisis from the perspective of the Faculty of Sciences in the case of the biology master's program, the construction of the EE field in postgraduate pedagogy to the Master's in Teaching for Higher Secondary Education in Social Sciences, including the Master's in Sociology from the Faculty of Political and Social Sciences and the Faculty of Psychology.

4 - In the context of EE, the threat represented by the civilizational crisis is initially recognized. According to Victor Manuel Toledo, it is a process in which various areas of knowledge converge to try to explain it, jeopardizing the survival of the human race in favor of capital, as explained by Dr. John Saxe Fernández with his term "crisis in the age of the Capitalocene."

5 - As indicated by Leff (2004a; 2004b; 2008; 2011), Epistemological rupture is a prerequisite for understanding the magnitude of environmental problems and empowering oneself to adopt a disruptive behavior in the face of inertia, bureaucracy, and apathy. This rupture is fundamental, as pointed out by Víctor Manuel Toledo, for sustainability sciences to become the "sciences of sciences" due to the dialogue of knowledge, the exchange of theories, and methodologies necessary in this field.

ACKNOWLEDGMENTS: The author expresses gratitude to the Collective Network of Researchers in Higher Environmental Education in Latin America and the Caribbean (EARTE-ALyC) for the opportunity to participate in this collective project. Also, thanks to UNAM for organizing the Mexico chapter and to IPN for allocating and funding the research project SIP20230658.

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Processing and editing: Editora Ibero-Americana de Educação.
Proofreading, formatting, normalization and translation.

