

# Environmental Education and Higher Education: An Interdisciplinary Teaching Challenge

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**Abstract** - There is an urgent need of connection between diverse areas of knowledge under an interdisciplinary approach in higher education, especially, in regard to environmental issues. The learning process in higher education should promote humanist, social and political formation. Environmental education should be integrated to social practices in order to achieve sustainable development, common good and quality of life. The study here reported is aimed at both checking if the environmental themes and related actions are inserted in political-pedagogical projects (PPP) and curricular activities of universities in Vitória da Conquista, State of Bahia, Brazil; and at evaluating if the educators are cognizant of and trained in environmental education. Results show deficiencies in PPP and in curricular activities regarding the environmental theme, what confirms the need to insert an effective environmental education awareness among students and teachers.

**Index Terms** — Environmental education. Higher education. Interdisciplinary.

## I. INTRODUCTION

Higher Education in Brazil has been changed by Curriculum Guidelines defined by Ministry of Education. The concept of teaching and learning has been changed from a reduced perspective that teaching is only “passing on” knowledge to a new concept that aims a “circular causation” and integration with multiple references among the subjects of the universities program.[1]

According to the above mentioned authors, interdisciplinarity means to establish connections between two or more subjects or parts of knowledge, to replace fragmented approaches for those that involve the connection between diverse types of knowledge. This process substitutes the one-way communication for a “multireferentiality”, which integrates different kinds of knowledge and enables interpretations from different individuals.

The interdisciplinary approach in higher education intends to lead the student to a movement of interaction-integration of concepts, knowledge and relationships that makes him capable of understanding the full extent of the reality and its contradictions. Accordingly, the pedagogical proposal of the

higher education institutions must be integrated to the social context in which these institutions actuate and must disseminate a guideline that leads to social responsibility.

Cavalcanti[2] states that the sustainable society progress needs to be understood in terms of quality of life indicators such as, health, longevity, education, environmental conservation, psychological maturity, leisure, community spirit and so forth - not only by material acquisitions. According to Batista and Albuquerque[3] the terms “quality of life” and “sustainable development” are inextricably linked, since the first term is the essential goal for the realization of all actions seeking to conform new paths of development with environmental protection.

Environmental education in its broadest sense means to understand how inseparable the relations between nature and society are. For this reason, Leff[4] states that the implementation of a more comprehensive theoretical field in education is essential, one that adds the environmental complexity. This is a context in which one may benefit from political-pedagogical projects (PPP). As exposed by Saviani[5], PPP covers actions and thoughts aimed at social-political and collective commitment (by political, one may understand the formation of an individual for a certain society). Today, the environmental education plays an important role in building social, economic, political and environmental relations, providing a kind of education that reflects as a responsible and human practice involving teachers and students.

Pires[6] states that the environmental education is a challenge toward the institution of a balance between the humanity and the natural resources, therefore, this interdisciplinary practice will ensure the construction of an environmental awareness and may result in developments in the social context.

In the first Intergovernmental Conference on Environmental Education, Tbilisi, USSR (1977), recommendation 1 states that environmental education is the result of the orientation and articulation of diverse subjects and educational experiences that facilitate the integrated perception of the environment, permitting actions that are more rational and capable to respond to social needs.

The National Environmental Council (CONAMA) defines environmental education as a training and informing process focused on the development of critical awareness of the environmental issues, and of developing activities that lead to community participation to preserve the environmental balance.

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Considering the aforementioned statements, this study is aimed at evaluating the pedagogical political-pedagogical projects and the curricula of higher education institutions in the municipality of Vitória da Conquista - BA, observing the inclusion of environmental issues and environmental education proposals and evaluating the teachers training process for environmental education.

### II. METHODOLOGY

In terms of its objectives, the research reported here is descriptive and exploratory. According to Gil[7], descriptive researches have as their primary goal either to describe the characteristics of a population or defined phenomenon or to determine possible relations between the variables.

In terms of its nature, this is a qualitative and quantitative research. As stated by Minayo[8], a qualitative research is concentrated in the social sciences, in a degree of an unquantifiable reality. It deals with the realm of values, beliefs, senses and many other diverse complex constructors of associations, that may not be reduced to the transformation of variables.

The data collection was made in May and June of 2014. The qualitative analysis was made by the categorization of the argument of the answers based on the convergence of their content. The participants of the research were: five (05) higher education institutions, three (3) of them are private institutions, whereas the other two (2) are public, all of them are based or have units in Vitória da Conquista – BA.

Vitória da Conquista is a municipality which has an approximate population of (three hundred forty-five thousand) 345.000. It is the third most populated city in the state of Bahia. The economy is based on the service sector, especially education and health. In 2013, its GDP (Gross domestic product) has reached the sixth (6<sup>th</sup>) position among the municipalities in Bahia, a value of R\$ 3,836,498,000.00 (three billion eight hundred third-six million four hundred ninety-eight thousand reais), according to the Instituto Brasileiro de Geografia e Estatística (IBGE) [Brazilian institute of geography and statistics].

For ten years Vitória da Conquista has attracted attention as an educational center, this has been promoting an expansion in areas such as commerce, services, housing and health. The expansion, as expected, has improved the economy of the area, which resulted in social, cultural scientific and technological development. The municipality has also become an improver of employment, revenue and formation of human resources for its whole region.

The city is home to the Universidade Estadual do Sudoeste da Bahia (UESB) [State University of Southwestern Bahia], which offers, in Vitoria da Conquista, 18 under-graduate courses and has an average of 15,000 students; There is also an Advanced Campus of the Universidade Federal da Bahia (UFBA) [Federal university of Bahia], which possessed in 2014, 6 under-graduate courses and 960 students. In the municipality, there's also a unit of the Instituto Federal de

Educação, Ciência e Tecnologia da Bahia (IFBA) [Federal Institute of Bahia]; it has 1,064 students coursing technical courses, and higher education courses. The presence of IFBA is especially important, due to the Environmental Technician technical course, which invokes the commitment of this institution to the general and local reality in an educational scope.

Private Instititons have gained importance in the region and have expanded the number of offered courses in several knowledge areas, some examples are Faculdade de Tecnologia e Ciência (FTC), Universidade Tiradentes (UNIT), Faculdade Independente do Nordeste (FAINOR), a Universidade Norte do Paraná (UNOPAR), Universidade Paulista (UNIP), Faculdade Maurício de Nassau, Faculdade Santo Agostinho (FASA), Claretiano Rede de Educação, Sociedade Educacional da Bahia, Centro de Formação Teológica Batista Nacional (CFTBN). All these institutions have campuses or units in Vitória da Conquista, which by offering a variety of courses, increases the insertion of the local and regional community into higher education universe.

### III. RESULTS AND DISCUSSIONS

The pedagogical project is an instrument for the expression of the autonomy of the educational institution, which grants an identity to the courses and permits the emergence of new manners of organizing the pedagogical work, based on its expertise. From the data collected across the five (05) Higher Education Institutions – HEI's selected, we highlight the following topics:

#### *a) Analysis Topic 1: Incusion of environmental education in the political-pedagogical projects*

It was observed that, environmental education as a subject in undergraduate courses was present in just two (02) institutions and, as a cross-curricular subject presented in all courses, in only one (01) institution.

HEI 1 – The institution presents the subject in a distance education course through its own virtual environment. The proposal of the subject, named as Meio Ambiente e sociedade [Environment and Society], is to bring forth environmental issues to the students, presenting frequent environmental problems and the legislations on environmental protection, thus making it possible to develop an environmental mentality in the students aimed at raising an environmental awareness and creating a social being.

In HEI 2 – Environmental education is proposed as an optional subject: Gestão Ambiental [Environmental management], offered to the students of the Management course.

HEI 3 presents a subject and courses in environmental studies, a secondary level technical course named Meio-Ambiente [Environment] and an undergraduate course named Engenharia Ambiental [Environmental engineering].

The undergraduate course is aimed at forming professionals provided with technical formation and with the relations of multidisciplinary with emphasis to the economical, social and ethical-environmental contexts, additionally, it seeks to provide the training of environmental engineers with the necessary conditions to keep the professionals up with environmental problems and needs of the southwest of the state of Bahia, of the state of Bahia and of the whole country of Brazil. The technical course aims to train professionals to operate on the mitigation of the impacts caused to the environment and to develop critical citizens, which can become the pillars of a persistent search for the sustainable development.

The five analysed institutions have environmental education programs as an auxiliary tool, in accordance with the organizational view; It is aimed at disseminating the practice among the academic activities and in the internal dynamics

“In the last decade, Brazil has experienced a significant increase of environmental education. Today, transversality has already been achieved in the environment area as one of the themes of the National Curricular Parameters (PCNs), characterizing the pedagogical actions. As stated by PCN’s, developing attitudes and ethical postures, especially focusing on actions, much more than on learning of concepts”. [9]

Projects in environmental education, that are deeply based in concrete social problems and demands; besides providing a measurement of the social commitment of the higher education institution, are a key condition for universities to perform their social purpose. These projects are able to provide unlimited space in the curriculum to be used to the exercise of democracy regarding the collective planning of a research or subject matter,[10] they also decisively induce the reorganization of knowledge; establishing merges and divisions of the contents, which brings new challenges to their original areas,[11] discussing the role of university civic activities in the resolution of the crisis of the paradigms, caused by the expansion of disparity between knowledge in the academy and in the society.

As mentioned before the presentation of Environmental education projects is aimed at spreading an environmental culture both inside and outside the institutions. The creation/maintenance of such projects, mainly subsidized by the very HEI, reflects a feedback to a social demand, destined to the civil society around the educational space.

The development of an infrastructure in accordance with the actions, projects and environmental education goals is a fundamental element to the process of environmentalization, in a manner that the absence of it turns the implementation of projects impossible. Therefore, creating and structuring environmental education friendly facilities must be on the agenda of both institutional and public policies concerning the environmentalization of higher education, thus it may be the basis of the development of interdisciplinary projects and of the integrating research, teaching extension and management activities in HEI.

Another purpose of this work is to identify the main difficulties; elements that may facilitate and hypothesis from both public policies and environmental education. Some observed difficulties were the rigor in the academy; the deficiency of financial resources, infrastructure and personnel; the absence of institutional and public policies; the absence of professionals trained on environmental education; lack of knowledge in the Environmental education legislation and the absence of research, systematization and transfer of knowledge about this area.

#### *b) Analysis Topic 2: Environmental Education Actions and Interdisciplinarity*

All five (05) analysed Institutions keep the focus of their political-pedagogical Project on the discussion of environmental issues or on the intersections between educational and environmental issues, in other words, environmental education. There are, in all institutions, elements, which suggest a reflexion about the environmental awareness in higher education. This tendency, as can be seen by the analysis of the documents, is especially observed in both research and extension education. The political-pedagogical Project includes environmental education projects, attention to these issues on the part of the institutions and of their professionals. This predominance is especially perceptible in the intervention projects. Although, the insertion of the extension is considered to be another important part of the university activities, it is still an underappreciated extension due to the indicators commonly used to evaluate the educators at these institutions.

HEI 1 and HEI 2 offer private specialization courses in Environmental Education focusing on environmental management. The academic load is 360 hours or more, as required by the Resolution 1/2001 of the Conselho Nacional de Educação [National Education Committee] to officially recognize *lato sensu* courses. This requirement of a minimum load reflects an expectation for a greater commitment of the students of these of courses.

Distance education courses have been widely offered in a variety of areas, spreading computing technologies and presenting a contribution to a more democratic education, inasmuch as these technologies deliver educational content to people who live in distant from urban centers and those whose available time doesn't fit the regular education schedules. There is, though, a considerable issue concerning this type of education: the loss of the richness of the educational encounters, inherent in this kind of course, and of the intersubjective relation pretty appreciated in Environmental Education, once it is based on group and cooperative values.

HEI 1 promotes an annual Symposium on nature and health in a city located in the region of Chapada Diamantina, a green tourism region in the state of Bahia, as a way to integrate students to the natural environment; to nature-related themes; to the quality of life; to well-being; to practicing physical activities and health. Still related to environmental education, the same HEI also promotes,

outdoors activities. The events take place at other green tourism regions; they integrate study and quality of life experiences where the necessary structure is available.

### *c) Analysis Topic 3: Teacher training and the interdisciplinary proposal*

Teacher training for Environmental education is a topic of constant concern to those who obtain data regarding the theme. A dearth of professionals who are specialized in the environment and are aware of the theme was noticed in all the observed HEI. The observed professionals generally present simplistic plans that present no deeper involvement in the cause. It has a direct impact on the students' environmental awareness and on how these students may conduct their learning, concerning environment as a theme and the environmental context in practice.

In the verified political-pedagogical projects, there is a disposition to include environmental issues and to the systematization of environmental teaching combined with practices in the academy. These aspects claim a review of the students' knowledge and the cultural expansion, implying institutional methods toward the production of new academic scopes that propitiate interdisciplinary and discursive relations.

A dichotomy is perceived in the theory and in the practice of teacher training process. Political-pedagogical projects tend to describe the implementation of interdisciplinarity and transdisciplinarity in academy; this methodological practice meets some visible structural difficulties in the institutions, though. That's Because of the hyperspecialization of knowledge and the lack of articulation between higher education and the community.

The political-pedagogical projects, in all the five (05) studied HEI, describe the methodology and activities to be developed in the subjects and the interdisciplinary features of knowledge in order to promote the overcoming of the disconnection between theory and practice, mainly by the usage of local context and reality. With this in mind, teaching practices must be considered in the context of a methodological reform in order to be capable of producing appropriate changes in teachers' everyday life. The Systematic imposition of institutional documents has no positive impact on the actions of the educators, so the results are not successful.

Didactical-pedagogical mediation established between theory – practice and teachers – students must fit in both the course specific situation (and its characteristics) and in the development of the student to the exercise of citizenship and the development of work, whatever the subject under consideration. This mediation assures the construction of the ethic necessary to the democratic social interaction as an instrument to the formation; the actuation and the connexion of the diverse types of knowledge required to a truly formation in higher education. The phenomenon of learning is essential to the construction and reconstruction of teacher training and requires constant capacitation and qualification. The lack of interdisciplinary training strips education out of its context;

prevents the comprehension of issues related to the ethical formation of a citizen and prevents the student from being an individual capable of humanizing and developing the society by true education.

Teacher Continuing education is mentioned in the HEI, especially under the name of Jornada pedagógica [Educational Journey], which is defined as an instrument of complete formation, which provides the sustainability to actuate with competence and merit in the pedagogical practice.

During the analysis of the documents, the role of the institutions in the formation of teachers and students, in a manner that democracy and the pedagogical actuation are favored, is emphasized. But, in normative terms of reality, it is obvious that interdisciplinarity, though presented as a central element of the pedagogical projects, is kept away from the real everyday life of the observed proposals. Although, there are environmental education projects, they are not present among the contents for docent formation. The HEI's confirm their commitment with their courses interventions into social-spacial reality, covering its dimensions from local to global, inserted into the whole extension of their curriculum.

In some documents, it is perceptible the distance between what is stated and what is put into practice and the contradictions in the document itself. The analysis of some curricular references, methodologies and plans indicates a fragmentation of the subjects.

The HEI 1 is the only one which presents a curriculum that falls into the category of "inclusive curriculum" and, when introducing an active methodology, presents a notion of interdisciplinary formation.

## IV. CONCLUSION

Environmental issues require immediate action. A commitment from higher education institutions managers in order to promote the environmental awareness among those who, in the future, will enter the labour market and will exercise a professional activity, Mostly because this awareness is an indispensable thing to the preservation of human life and of the environment where it is inserted.

Therefore, the study confirms the urgency of evoking the interdisciplinary thought among higher education institutions, focused on the impossibility of separating the aggregation of knowledge from the environmental issues, thus, supporting the demand for a permanent and interdisciplinary environment education, both in the formation of the educators and in the formation of the students.

Higher education, which, theoretically, may represent a fertile mean to the implantation of policies capable of raising new environmental rationality; considering its formative features based on the articulation of teaching, researching and extension education; has not yet been capable of promoting reflexions in terms of the organization of curricular proposals

committed to seeking the formation of a kind of knowledge that is able to generate changes in the instrumental rationality, which still guides and organizes the hegemonic didactic-pedagogical practices, these are not capable of renouncing the bureaucratic formalism, which has built them and sustains them.

Another pillar of the Strengthening of environmental education is the development of partnerships between Higher education institutions and social institutions aimed at interchanges and political arrangements that are able to facilitate the emergence of cooperative and interdisciplinary works.

The noncompliance and lack of knowledge about the legislation on the environmental education produces an increasing concern around it, nonetheless, there is a proposal defending teachers autonomy to suggest different methods of educational actions.

The political-pedagogical project must permeate the necessary dynamics for proposing changes in the perceptions and consequently in the practices; these may break away with the bureaucratic model and drive actions along with the perspective. Thus, part of the assignments of the management team is to facilitate production, realization, monitoring, evaluation and reshaping of the project.

It becomes clear that Higher education institutions need to prepare their own political-pedagogical projects and that the projects must be dynamic and capable of following and understanding the relation of the education and social, environment and local reality. The political-pedagogical project, as a part of the educational system, needs to be focused on the proposed educational praxis. Therefore, discussions around interdisciplinary and environmental pedagogical issues must be put into practice during its elaboration, thus, preventing it from becoming a fragmented and bureaucratic document of the institution.

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