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## CONTRIBUTIONS OF EDUCATION TO SUSTAINABILITY IN THE INITIAL TRAINING OF PEDAGOGUES: THE CASE OF THE DISTANCE PEDAGOGY COURSE AT UDESC

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*Lucimara da Cunha Santos*

Centro de Educação a Distância – CEAD  
Universidade Estadual de Santa  
Catarina – UDESC  
Florianópolis – SC  
<http://lattes.cnpq.br/7969241877680459>

*Carolina Aly Raffaelli*

Florianópolis – SC  
<http://lattes.cnpq.br/5481893624510682>

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**Abstract:** This article presents the partial results of the research project “*Contributions of Education for Sustainability in the initial training of pedagogues: the case of the UDESC Distance Pedagogy Course*”, presented in the *VI International Colloquium on Education – Democracy in times of crisis*, which took place in September 2018 in the city of Joaçaba, in the state of Santa Catarina, Brazil. The objective of the research was to understand and identify the conceptions of academics about the approach proposed by the discipline *Education for Sustainability*, curricular component of the seventh phase of the degree course in Pedagogy in the distance modality offered by the “Centro de Educação a Distância” (Distance Education Center) in “Universidade Estadual de Santa Catarina”. An effort was also made to identify the discipline’s contributions to the development of interdisciplinary actions and practices, as well as to qualify the initial teacher training process. The methodological approach adopted in data collection and analysis was qualitative. It is hoped that the results of the research can contribute to the professional qualification of pedagogues, equipping them with teaching strategies and methodologies that are more adequate to the context of transformations of this 21st century.

**Keywords:** Initial training of pedagogues; distance education; sustainability; education and communication.

## INTRODUCTION

The research, whose partial results will be presented below, has as its object of study the discipline Education for Sustainability (EDS), curricular component of the seventh phase of the Degree in Pedagogy in the distance modality, of the Center for Distance Education (CEAD) from the “Universidade Estadual de Santa Catarina” (UDESC). The

research subjects were academics enrolled in that discipline.

The main references of the research project that originated this article were the following: the report organized by Sleurs (2008) result of the CSCT project<sup>1</sup> supported by UNECE and coordinated by universities from European Union countries; the educational model of competence for action proposed by Jensen and Schnack (1994); the ESD UN Decade Implementation Plan (2005).

The results of the project stage in which students enrolled in the 2017/2 semester were surveyed are presented, based on an *online* questionnaire, which was conceived based on document analysis within the scope of the EDS discipline, also considering the theoretical framework previously presented and the discussions and contributions of the project team. In addition, the contents presented and developed were also considered, as well as the activities proposed within the EDS discipline within the scope of the virtual room (AVA-Moodle from UDESC).

The research objectives were as follows: to understand and identify academics’ conceptions about the ESD approach; understand and identify the contributions of the ESD discipline to the development of interdisciplinary actions and practices (IPs); understand and identify the contributions of the EDS discipline to the initial training of pedagogues.

The procedures for data collection and organization were defined according to the qualitative methodological approach, considering the procedures proposed by Gil (2008) for this type of approach. In the analysis and interpretation of the data, content analysis was used, considering Bardin (2004) as the main reference, as well as the theoretical references mentioned at the beginning of this introduction.

1. Competencies for EDS teachers: a framework to integrate ESD in the curriculum of teacher training institutes Curriculum, Sustainable Development, Competencies, Teachers Training.

## THE CHALLENGES OF TRAINING IN EDUCATION FOR SUSTAINABILITY

As a result of the debates that took place in the 1970s on the relationship between science, technology and society (STS), as well as the emergence of the environmental movement and environmental education (EA), specialists from different areas highlight the importance of quality education for all citizens with a view to a more sustainable society. Discourses on the need for commitment by all nations to values that consider social equity, the strengthening of democratic systems, peace, as well as the materialization of a culture of sustainability are unanimous (FREITAS, 2004; PEDROSA, 2010; SANTOS, 2014). Values that can contribute to a more solidary and balanced relationship between human beings and nature, because although it is part of nature, in many moments they place themselves outside of it, in an attempt to dominate it, in many cases generating imbalances and socio-environmental risks.

Despite having numerous efforts in the field of formal education, especially considering the contributions to Environmental Education (EE), most of education, especially in Brazil, is far below what is needed for a change of thought and action in for a culture of sustainability. This way, “a new vision and a deeper way of thinking about education” is required, which means breaking with models that prioritize competition and consumption without having the “care” and “conservation” necessary to maintain life. (UNESCO, 2002). More than competition, we need collaboration, because without collaboration efforts and investments in environmental policies will be useless.

In order to overcome these challenges, learning is needed to teach us how to live more sustainably, which undoubtedly does

not mean just the inclusion of more subjects in school curricula, or a curricular change that includes the concepts of sustainability. The change has to go deeper. It must be focused on the redefinition of teaching and learning processes from a more relational and expanded point of view in the world, which poses immense challenges to us, responsible for initial teacher training (SANTOS, 2014).

## CHARACTERISTICS OF EDUCATION FOR SUSTAINABILITY.

Even if ESD is not configured as a specific subject to be taught, for its approach the teacher will have specific needs, such as knowledge, skills and competences, in addition to new teaching methods and strategies that must result in the consequent learning of students. training. Thus, Higher Education Institutions (HEIs) responsible for teacher training need to consider the ESD approach, integrating it into the curriculum of degree courses.

In his doctoral thesis, Santos (2014) highlighted some fundamental characteristics of the ESD approach.

*Interdisciplinary nature* – ESD-oriented approaches must not be confined to a single subject in a given course curriculum, nor must it become a separate and fragmented subject or content. Before that, a perspective that must permeate the entire course curriculum with integrated and interdisciplinary proposals.

*The EDS enables the use and application of different teaching strategies and methods* – Because it is an approach with an interdisciplinary characteristic, methodologies such as project learning, problem solving, case study, text, art, drama, debate, experiences and experiments, among others, are great strategies that contribute to learning the concepts necessary for the approach EDS.

*EDS is applicable locally and globally* – Teaching and learning experiences must be integrated into the personal and professional daily lives of students and professors. That is, they must be related to the context and recognize that local actions can have global effects, taking into account the interconnection of social and natural ecosystems.

*ESD promotes lifelong learning* – In this sense, the ESD approach articulates with other initiatives of an educational nature, such as Education for All, Education or Scientific Literacy, Education for Literacy.

*ESD involves both formal and non-formal education* – As an educational initiative from which public policies in this area must consider environmental and sustainability issues, which must be integrated both in formal and non-formal education.

Thus, taking into account the characteristics presented above, especially the interdisciplinary nature of the ESD approach, which turns out to be built on a wide range of perspectives and contributions from various fields of knowledge. We are aware of our responsibility in facing the challenges that this century presents us with, namely in the field of governance and management of natural resources, climate change and environmental risks, rural development, sustainable development, agroecology, agroindustry, urbanization sustainability, prevention and mitigation of disasters and environmental risks, poverty reduction, socio-environmental responsibility, human rights, peace and food security, gender equality, cultural diversity and intercultural understanding, health, bioethics, among many other challenges that lie ahead.

In the context of formal education, the ESD approach poses as a fundamental issue the transformation of the school environment in order to promote and consolidate experiences based on the idea of building a new type of schools, we have examples of the so-called

**Sustainable Schools.** Such schools must consider sustainability as a central part of their mission and pedagogical project, as well as consider sustainable development (SD) an essential principle that guides school planning in the medium and long term.

The day-to-day organization and management of the school, including its architectural design, must consider the principles of sustainability – economically viable, socially fair, and environmentally balanced (BREITING et al., 2005).

## **DATA ANALYSIS AND DISCUSSION OF RESULTS**

In order to reach the objectives proposed for the research, at the end of the 2017/2 semester, students enrolled in the EDS discipline were encouraged to answer an *online* questionnaire. This questionnaire was conceived based on document analysis within the scope of the discipline, also considering the theoretical framework presented in the introduction of this article, as well as the discussions and contributions of the project team. In the analysis, the contents presented and developed were also considered, as well as the activities proposed within the EDS discipline within the scope of the virtual room (AVA-Moodle from UDESC).

The applied questionnaire sought answers to the following questions: 1 - What are the conceptions of the academics enrolled in the discipline about the ESD approach; 2 - What are the contributions of the EDS discipline to the development of actions in this educational perspective; 3 - What are the contributions of the EDS discipline to the development of Interdisciplinary Practices (IP); 4 – What are the contributions of the EDS discipline in the initial training of pedagogues.

65 academics responded to the questionnaire.

## DATA ANALYSIS.

The organization and analysis of the data was carried out from the codification and establishment of categories of analysis.

Categories / Investigation Questions	Data source
Academic conceptions about the ESD approach.	Questionnaire with closed questions
Contributions of the subject to the development of actions from the perspective of the ESD approach.	Questionnaire with closed questions and AVA-Moodle of the discipline.
Contributions of the EDS discipline to the development of Interdisciplinary Practices.	Questionnaire with closed questions and AVA-Moodle of the discipline.
Contributions of the EDS discipline in the initial education of the pedagogue.	Questionnaire with closed questions

Table 1: Analysis Categories.

Source: Primary research data.

The observed evidence was arranged within the categories of analysis through the construction of tables and charts (Table 1).

## DISCUSSION OF THE RESULTS

Below is a discussion of the results from the analysis of the four research questions, as well as the alternatives and percentages of answers given by the academics for each one of them. Additionally, it was considered in the analysis, the activities developed with the students in the scope of the discipline - discussion forums and learning activities.

### Conceptions of academics about the ESD approach

In the applied questionnaire, students were asked to indicate which of the four conceptions – 1) systemism, 2) animism, 3) mechanistic reductionism, 4) creationism, 5) no conception or other conception that they want to indicate – identified the approach of the ESD discipline.

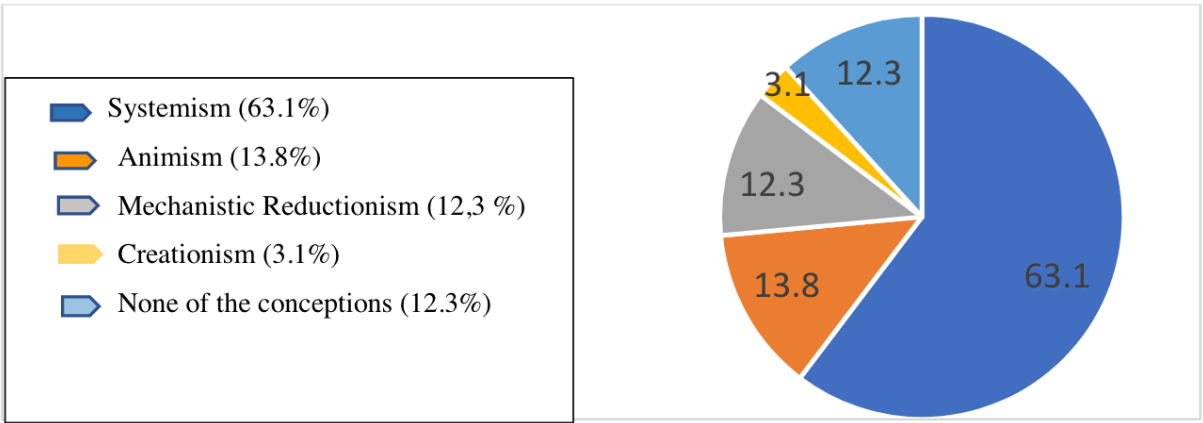
The students' responses show that although most students identify and relate the discipline's approach to the systemic conception (63.1%), there are also many students with misconceptions about this educational approach (41.5%). As evidenced by Santos (2014) and other authors Breiting, Mayer and Mogensen (2005); Freitas (2004); Jensen and Schnack (1994); Pedrosa (2010); Sleurs (2008), the ESD approach requires systemic and integrative approaches, as this way it contributes to the development of skills in solving complex problems, especially those related to environmental problems, since they show interrelationships between society, environment and economy and thus stimulate critical reflections and innovation.

### Contributions of the EDS discipline to the development of actions and practices from the perspective of this approach

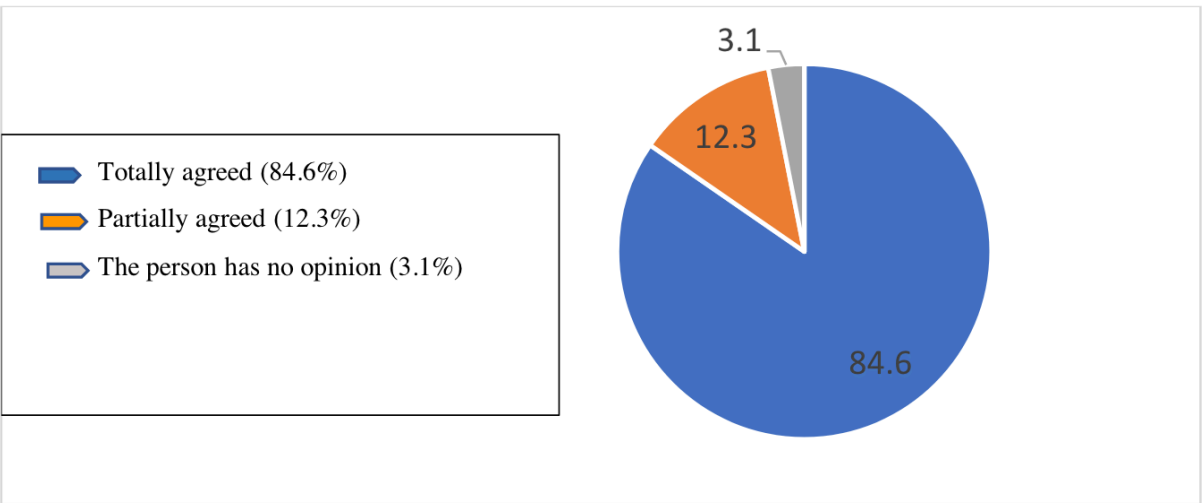
In order to identify the discipline's contributions to the development of actions and practices from the perspective of the ESD approach, the question analyzed was the following: to what extent did the concepts, themes and contents addressed in the ESD discipline contribute to the construction of knowledge and actions practices from the perspective of the ESD approach?

In analyzing this question, the contents and activities developed within the ESD discipline were also considered.

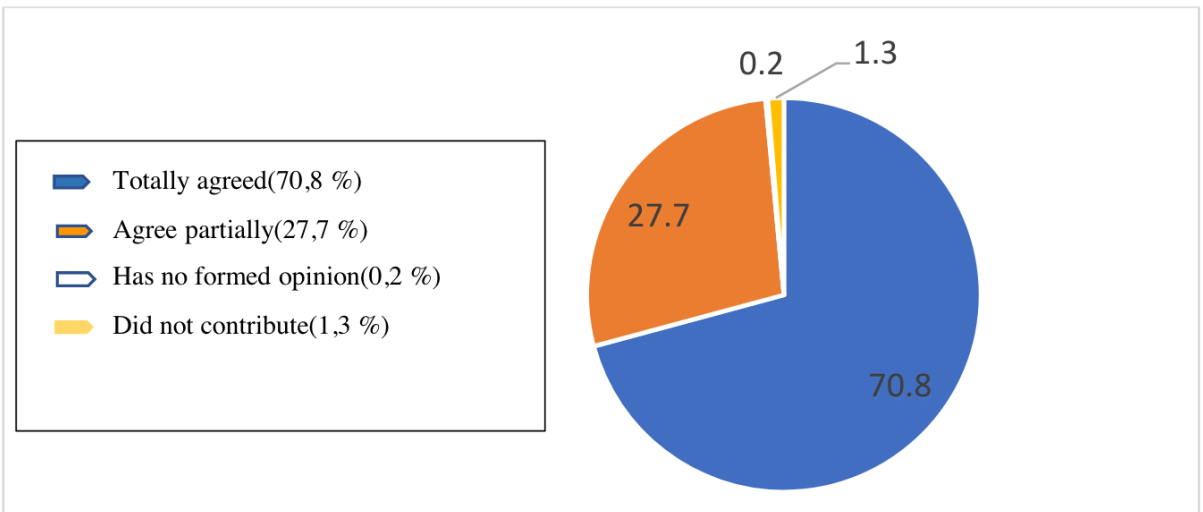
The vast majority of academics agreed that the ESD discipline contributed to the construction of knowledge and practical actions in the context of environmental and sustainability problems. In addition to what was observed in the answers given to this question, based on the analysis of the discipline's contents and activities throughout the semester, it was found that the academics had the opportunity to incorporate theoretical and practical knowledge about the problems



Graphic 1: Conceptions of academics about the approach to the EDS discipline.



Graph 2: Development of ESD actions and practices.



Graph 3: Contributions of the EDS discipline to the development of IPs.

in their training, environmental issues and sustainability, as well as being able to propose practical actions in favor of a culture of sustainability. This result is in line with the proposal of Jensen and Schnack (1994) who defend the so-called educational model of competence for action, which, according to them, is particularly suitable for approaches from the ESD perspective. In that model, there are four dimensions of knowledge that need to be considered in ESD training proposals: on socio-environmental problems; on the causes and consequences of socio-environmental problems; on change strategies; about alternatives and worldviews.

### **Contributions of the EDS discipline to the development of Interdisciplinary Practices**

To identify the discipline's contributions to the development of IPs, the following question was asked: to what extent do you consider that the discipline contributed to the development of IPs?

In addition, as in the previous item, the contents and activities developed within the EDS discipline and its articulation with other disciplines of the same phase of the course were also analyzed.

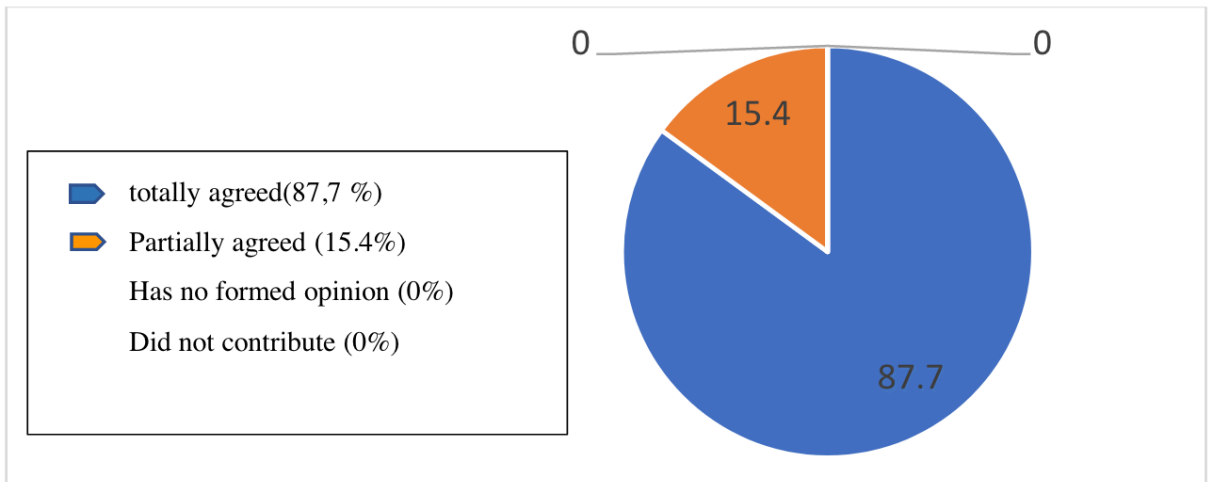
Most academics consider that the ESD discipline has contributed to the development of Interdisciplinary Practices (IPs). It is important to consider that in the analyzed semester there was the possibility of the EDS discipline being integrated with other disciplines of the same phase. This integration favored the academics' understanding of the concept of interdisciplinarity and the way in which we can articulate knowledge from different areas in problem solving. Integration was facilitated from a **articulating theme** - *Sustainable Management in non-formal education spaces*. This theme was defined by the professors responsible for the disciplines

that participated in the proposal. - *Production of Didactic Material for Distance Education, Management of Distance Education and Supervised Curricular Internship III*. Based on the articulating theme, the academics developed intervention projects related to the curricular internship, which were validated according to criteria established by each of the disciplines participating in this experience. This type of interdisciplinary practice is designated by Verónica (2015) as a thematic. This type of IP occurs when disciplines are related based on a common theme. As previously highlighted, the main feature of the ESD approach is its interdisciplinary nature. Therefore, ESD-oriented approaches must not be confined to a single subject in the curriculum of a given course, nor become a separate subject or content, but first and foremost, it must integrate the pedagogical project of courses with proposals integrative and interdisciplinary.

### **CONTRIBUTIONS OF THE EDS DISCIPLINE TO THE INITIAL TRAINING OF PEDAGOGUES**

The following question was elaborated for this item: to what extent do you consider that the concepts, themes and contents of the ESD discipline contribute to the initial training of pedagogues?

The vast majority of academics considered that the discipline contributed to the initial training of Graduates in Pedagogy. Universities and other formal and non-formal educational institutions are responsible for promoting research and teaching within an ESD approach, being particularly a privileged theme for research and educational development. Such an action requires not only curriculum reorientation, but also methodological changes that allow the development of new knowledge and skills on topics related to socio-environmental



Graph 4: Contributions of the EDS subject to the initial training of pedagogues.

issues. The institutions responsible for teacher training are fundamental in promoting changes that address the issue of sustainability. Teachers must not only be alerted to the importance of addressing issues related to socio-environmental issues, but also be prepared to be able to integrate content related to these issues into curricula and teaching programs and into their day-to-day professional activities (UNESCO, 2005).

## CONCLUSIONS AND FINAL CONSIDERATIONS

The partial results of the research showed the importance of the ESD approach in the context of initial teacher training, especially for graduates in pedagogy. Considering our personal, social and institutional commitment to building a more balanced society, this way of approaching socio-environmental issues can be an important teaching and learning strategy, thus contributing to the professional qualification of future teachers.

Although most academics related the approach of the ESD discipline with the systemic conception, some students presented a misunderstanding about this type of approach. This data indicates the

importance of inserting content related to epistemological concepts in initial teacher training courses, as they guide the methodologies and practices derived from them.

It is possible to infer that the ESD discipline contributed to the construction of theoretical knowledge and practical actions within the scope of themes related to environmental problems and sustainability, as well as to the development of Interdisciplinary Practices, thus reinforcing the interdisciplinary characteristic of the ESD approach, as well as as their potential with ability to articulate different knowledge to solve a problem, analyze a case, elaborate a project or study different problem situations.

Even if ESD is not configured as a discipline with a specific curriculum and content, the research has shown the importance of qualifying the teaching and learning processes in the context of teacher training, with regard to knowledge, skills and competences, in addition to new methods and teaching strategies that address environmental issues and sustainability. The ESD requires systemic and integrative approaches, consistent with complex problem-solving processes



and that show interrelationships between society, environment and economy, as well as stimulate critical reflection and innovation.

It is hoped that the results of the research can contribute to the professional qualification of pedagogues, contributing and providing them with teaching strategies and methodologies that are more adequate to the context of transformations of this 21st century.

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