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Dimensión ambiental y el desarrollo sostenible en el currículo de la educación superior

Environmental dimension and sustainable development in the higher education curriculum

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ABSTRACT

The purpose of the research was to analyze the environmental dimension and sustainable development in the higher education curriculum in the case study of the University of Pamplona, Pamplona, Norte de Santander, Colombia. We worked methodologically from the qualitative approach, for this purpose the phenomenological perspective was considered, the research subjects were six (06) teachers. environmental education is key to understand the existing relationships between natural and social systems, as well as to achieve a clearer perception of the importance of socio-cultural factors in the genesis of environmental problems. In the face of the planetary environmental crisis, it is important to take preventive and restorative measures to stop and reverse as soon as possible and to the maximum extent feasible, the natural deterioration of our only home (the Earth) because the future is a probability and the present is a reality.

Descriptors: environmental education; education for sustainable development; educational planning. (Source: UNESCO Thesaurus).

RESUMEN

El propósito de la investigación fue analizar la dimensión ambiental y el desarrollo sostenible en el currículo de la educación superior en el caso de estudio de la Universidad de Pamplona, Pamplona, Norte de Santander, Colombia. Se trabajó metodológicamente desde el enfoque cualitativo, para tal fin se consideró la perspectiva fenomenológica, los sujetos de investigación fueron seis (06) docentes. La educación ambiental resulta clave para comprender las relaciones existentes entre los sistemas naturales y sociales, así como para conseguir una percepción más clara de la importancia de los factores socioculturales en la génesis de los problemas ambientales. Ante la crisis ambiental planetaria es importante tomar medidas preventivas y de restauración que frenen y reviertan a la brevedad posible y hasta el máximo punto factible, el deterioro natural de nuestro único hogar (la Tierra) pues el futuro es una probabilidad y el presente es una realidad.

Descriptores: educación ambiental; educación para el desarrollo sostenible; planificación de la educación. (Fuente: Tesauro UNESCO).

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Research articles section

INTRODUCTION

The following article presents the environmental dimension as a study phenomenon (Cortés-Ramírez, & González-Ocampo, 2017), which is little taken into consideration when planning educational curricula in Colombian universities. The importance of the study, formulation and inclusion of intermediate categories in university curricula that allow the formation of a versatile and flexible professional, trained to design and implement social projects oriented towards sustainable development is highlighted (Moreira-Arenas, *et al*. 2022), (Alonso-Betancourt, *et al*. 2020), (Dewsbury, & Brame, 2019).

Environmental education must be linked to the generation of values, going beyond intuition as a method. In order to generate environmental knowledge, a systematic interpretation of reality under an interdisciplinary approach must be taken into account. Successful environmental education projects are those of an interdisciplinary nature, even when the tendency is to achieve transdisciplinarity (Márquez-Delgado, *et al*. 2021).

Environmental education is recurrently presented in a partial way from an external perspective to social, natural and cultural realities, despite the fact that science, technology, society and nature are interdependent. It was pointed out that sustainable development demands a standard of living in which the risks for the individual in society are considerably reduced. Therefore, environmental education should be considered as a tool for the generation of a culture of prevention. This requires the incorporation of topics related to the quality of life and the quality of the environment in which individuals live; therefore, the different professions have to recognize their responsibility before the generation of threats and their impact on the quality of life of others, the adversities raised, could be part of the effects of the so-called hidden curriculum (Colón-Ortiz, 2016).

Next, it became noticeable that there is a limited perception of the environmental problems of teachers at different school levels. The teaching of environmental education needs to be based on less rigid and authoritarian models, requiring increasingly democratic and flexible strategies. It is proposed as a strategy for educational intervention, starting from concrete problems that require and allow immediate attention from individuals and the use of playful spaces or natural environments. The realization of workshops as a strategy for the definition of problems socially perceived as a priority allows detecting the differences between different social groups in the valuation of the importance of these problems. Experiences related to environmental education support materials have been generated from various perspectives, even though a biologicist approach still predominates (Campoverde-Robledo, *et al*. 2022), (Batista-Ribeiro, *et al*. 2018).

From (Pulido-Capurro, & Olivera-Carhuaz, 2018), it can be understood the challenges faced by environmental education in Latin America, where a mechanistic vision of content has been focused on students as a learning principle, excepting the transforming action of citizen participation in social contexts as construction of a subject in capacity to assume with responsibility the value of safeguarding the environment not only from a biological connotation, but, that the environment can be assumed as a sustainable space for the integral growth of peoples from the establishment of public policies where tourism and other employment-generating activities are promoted.

In this sense; two approaches are presented in one, that is, from the care of the environment, eco-entrepreneurship can be generated, a situation that leads users to the rational conservation of resources and spaces used for the benefit of the cost chain (Arroyave-Puerta, & Marulanda-Valencia, 2019). Therefore; humanity faces the challenge of promoting an action to care for the planet to the extent of solving the problem of economic sustainability of families.

This is a challenge that universities must assume from a new curricular conception, not only to promote knowledge, but also aptitudes, abilities, skills, to assume the position proposed by (Arroyave-Puerta, & Marulanda-Valencia, 2019), as part of the academic daily life, so that progressively a culture for environmental sustainability can be built in the new generations. Therefore, the curriculum, when incorporating the environmental dimension, must do it from a

merger with entrepreneurship, taking into account not only professionals related to the environment, but also educators and other careers with the intention of multiplying the transforming action from the university; being what has been proposed, supported by the arguments of (Tovar-Cardozo, et al. 2021).

In consideration, the purpose of the research was to analyze the environmental dimension and sustainable development in the curriculum of higher education in the case study of the University of Pamplona, Pamplona, Norte de Santander, Colombia.

METHOD

We worked methodologically from the qualitative approach, for this purpose we considered the phenomenological perspective, which describes the structures of experience as they are presented in consciousness, without resorting to theories, deductions or assumptions from other disciplines. Hence, the importance of the environmental dimension as a transversal axis in the formation of the citizen of the world who seeks a true sustainable development can be determined from reality, and for this reason it is required to be studied through the phenomenological method; the essence of this reality depends on the way in which it is lived and perceived by the teaching-management subject, a unique internal and personal reality, proper to each one of them. Therefore, in Table 1, the research subjects are presented:

Table 1. Study subjects.

Institución	Informantes	Código
Universidad de Pamplona.	Docente departamento de Ciencias Ambientales.	DUP1.
	Docente departamento de Ciencias Sociales.	DUP2.
	Docente departamento de Ciencias Ambientales.	DUP3.
	Docente departamento de Ciencias de la salud.	DUP4.
	Estudiante del departamento de Ciencias Sociales.	DUP5.
	Estudiante del último semestre de Ciencias ambientales	DUP6

Source: Own elaboration.

The research subjects presented in Table 1, are six (06) teachers who make professional life at the University of Pamplona, in the faculty of environmental engineering, therefore, they met the phenomenological criteria of population inclusion to provide relevant information to the study phenomenon.

As a data collection technique, we proceeded to the application of an open interview with each research subject, then each answer given by the participants in the interview was reviewed, taking into account the common phrases or aspects to form thematic contents structured in central ideas with emergent character. This will allow the formation of a coherent pattern of aspects of interest for the study.

Then, the phrases with sense and meaning that aimed at solving the research questions were identified, according to the above, the emerging categories were enunciated, taking into account their relevance to the research topic.

Emerging theorization of research

The term sustainable development has a very broad meaning, it refers to the set of changes in the economic, institutional and political structure of the different countries of the world. It is synonymous with improvement, progress, indicating a change towards a situation preferable to the present one, leading to a positive transformation. The objectives of sustainable development are not only quantitative but also qualitative. Development is a dynamic process, in permanent imbalance, which tends to increase the living conditions of all the world's population.

Sustainable development, in order to be so and to differentiate itself from simple growth, technification, industrialization, urbanization or acceleration of rhythms, must: satisfy certain conditions, in addition to being endogenous, i.e. born and adapted to local specificity, and self-managed, i.e. planned, executed and administered by the subjects of development themselves. a) Economic sustainability, in order to have the necessary resources to give persistence to the process. b) Ecological sustainability, in order to protect the natural resource base, looking to the future and safeguarding, without ceasing to use them, the genetic resources (human, forest, fish, microbiological), water and soil.

Sustainable development implies working on a local scale, trying to combine economic growth with a society that offers opportunities for all, and better resource productivity and decouples growth from environmental degradation. The natural environment would not reach its own sustainability without the balance of the social and economic environments represented by the structure of the society, its jobs, employment, immigration.

These three environments must have the same weight when developing the strategy to achieve full sustainability, especially in large urban areas, where environmental problems are important given the population agglomeration that exists. In the most disadvantaged areas, which usually coincide with rural and less populated areas, the natural environment is in much better condition than in the previous areas mentioned, so for better sustainability, more intensive social and economic actions should be taken to mitigate the differences in these areas.

Sustainable development is an objective to be achieved, a long-term process, and to achieve it, a change in society's mentality is necessary. Thus, entrepreneurs and managers will have to ensure that business growth is not carried out at the cost of social discrimination and environmental deterioration, public administrations will have to design social policies that do not reduce economic progress and environmental policies that are based on solid scientific foundations and are economically efficient, citizens will have to participate in decision-making processes and carry out sustainable practices in their daily lives, etc.

Approaches must ensure that economic activity improves the quality of life for all, not just a select few. Use resources efficiently. Promotes maximum recycling and reuse. Relies on the development and implementation of clean technologies. Restores damaged ecosystems. Promotes regional self-sufficiency. Recognizes the importance of nature for human well-being.

Environmental education is key to understanding the relationships between natural and social systems, as well as to achieving a clearer perception of the importance of socio-cultural factors in the genesis of environmental problems. In the face of the planetary environmental crisis, it is important to take preventive and restorative measures to halt and reverse as soon as possible and to the maximum extent feasible, the natural deterioration of our only home (the Earth - the future is a probability and the present is a reality), which has been caused in part by human activity.

This task is not easy, so it will be of utmost relevance that the global and local society, establish alliances to carry out the work for this purpose. The measures that could be taken should cover the different dimensions and social sectors, such as education, family, culture, politics and economy; because the phenomenon of the environmental crisis is a multidimensional problem and as such must be treated to solve it.

In this case the main interest is to form through education, citizens with a high degree of environmental awareness, sensitive to their environment, and responsible for their actions, with a global thinking but able to act locally within their communities in and for the benefit of nature

and life in any of its manifestations; Therefore, environmental problems should be addressed not only from the pedagogical dimension, but also from the political, economic, cultural, and social, always starting from articulated work, allowing the development of environmental programs aimed at the conservation and restoration of the natural environment and care of our environment in general.

Other dimensions that influence the perception of the environment at the University of Pamplona (UNIPAMPLONA) are the political and economic dimensions, since they influence the model of university and country that is projected from the classrooms, but also from the plans of the nation. The political dimension, with the help of the institutions, defines the norms or rules to be followed by the members of a particular society, in order to maintain coexistence and social stability.

On the other hand; The economic dimension of a country at the cost of the irrational exploitation of its natural resources, ironically could also affect its economy in the future, that is why defining a mode of economic production based on the overexploitation of its natural resources becomes a vicious cycle, since the depletion of these resources affects the economy, This is reflected in the low productivity of goods and services and consequently in the increase of consumption among the population, which has repercussions in the increase of unemployment in communities that depend on a certain economic activity, be it the timber, fishing, mining, or agricultural industry. Therefore, it would be important to generate from this area, projects that seek the economic sustainability of the different sectors of society, through activities that generate sufficient resources for the economic sustainability of community or individual projects.

From another variable such as culture, as a generator and transmitter of customs, values and intergroup beliefs -inherited from generation to generation-, it leads human groups to think of the world in a certain way, besides being flooded with different meanings, at the same time it allows them to build their own identity as social groups that makes them different and unique from others (Castro-Sánchez, et al. 2022).

However, the environmental problem is a phenomenon that penetrates the different spheres of human societies (political, cultural, economic, educational and social), and affects them in such a way that the need for their social reconfiguration arises, since their modus operandi no longer agrees with reality. Hence, the theoretical analysis of this phenomenon and the production of new environmental knowledge start precisely from the tangible, from the interactions of the different social spheres and the individuals that make them up, with the purpose of stopping environmental deterioration, promoting the conservation and restoration of the natural world, as well as fostering different relationships between society and nature.

Likewise, it is possible to visualize educational institutions as the main responsible for carrying out the task of educating in environmental matters, since they traditionally have the role of training and educating the future citizens of nations, in addition to having the infrastructure and human and economic resources; Likewise, their internal organization, already established in advance, greatly favors the design and application of environmental programs to their students, which would be feasible through a teaching staff trained on these issues, to achieve the desired educational objectives, such as the creation of values that inculcate respect, tolerance, commitment, conservation of nature, among others.

But a subject that must be dealt with multidimensionally is the understanding of the environmental crisis that the planet is going through and its possible solutions, it is a subject that the heterogeneity of this phenomenon is not a matter that should only be dealt with from the pedagogical field, since the problem is even more complex, besides the fact that other factors of a sociocultural nature intervene in the pedagogical processes, limiting or potentiating them. At present, great attention is paid in various events and documents to the analysis and projection of Higher Education, the reflection on its mission, the prevailing trends, the present challenges and the urgencies it must face, so that it becomes a modern, creative educational system at the service of future generations.

On the other hand, it is necessary that students learn to learn, to seek and appropriate the knowledge they need on their own, which must characterize them as professionals. For this, the curricular design must foresee that, increasingly, during the course of the career, the activities that characterize the ways in which the professional learns, such as: the search and study of the bibliography, scientific debate among colleagues, consultation with specialists, observation and

scientific experimentation, are incorporated into the teaching process. The need for a new type of curriculum and for the association of Environmental Education with sustainable development requires processes of decentralization and curricular flexibility. A sustainable curriculum would be one that takes into account local customs, idiosyncrasies and cultures and facilitates the participation of teachers, students, the educational community and the different social agents.

It is important that the curricula bear in mind that the integration of Environmental Education in the educational process takes place through three interdependent processes that in reality occur in only one: education, instruction and training. Thus, in education, the incorporation of the environmental dimension should generally promote the formation of values; in instruction, expressed in a system of knowledge that cultivates environmental thinking, explaining causes and consequences of environmental problems; and in training, promoting habits and skills that translate into competences in individuals and social groups.

These new contents are not contemplated in exclusivity by a specific discipline, but can be related to many of them, for example, when referring to technical education, specifically to technical agricultural education, it states that the contents should emphasize practical aspects about the most frequent problems faced in rural communities, deepening in the teaching of much more useful contents and of more immediate application.

For this reason, one of the main conclusions is the need for flexibility in the curricula to make it possible to introduce the subject and treat it as a cross-cutting theme. Therefore, curricula should not be designed in such a way that they determine Environmental Education actions, but their flexible design should enhance them. In this way, it will be important to have all disciplines present, but with the possibility of approaching them without barriers.

Another point is that current expectations highlight certain skills that should be present in the professional's mode of action, such as those related to the use of scientific-technical information, computer techniques, foreign languages and others. In these cases, practice has shown that these skills cannot be achieved by individual subjects alone, but that it is necessary the joint action of all the subjects that make up the curriculum.

A final category refers to the professional who is in demand, trained to lead multidisciplinary teams of specialists and to attend especially to the planning and environmental management of the territory and the conservation, improvement and environmental management of resources. This level may also include specialists on specific environmental issues with the capacity to diagnose problems within their area of specialization.

CONCLUSION

Environmental Education is needed that encompasses the different sectors of Colombian society, because none is less important than another, since all have a preponderant role in the protection and restoration of the natural environment. The family, the school, the mass media, the community of settlers, urban and rural communities, private and public companies, hospitals, recreational centers, stores, sports centers, etc., all of them are an opportunity to carry out pedagogical processes that lead to what I have alluded to throughout this work: the preservation of life (human and non-human) on the planet. From this perspective, environmental education is understood as a necessarily critical pedagogical field, since it inevitably owes its existence to the environmental crisis as a crisis of civilization. Therefore, the educational project that emerges from it must be oriented to interdisciplinarily problematize those epistemological coordinates in which the disciplinary knowledge was structured and with them, the practical implications it produced on the environment, sustainability and development. It is also assumed from this article that the profile of concrete interventions in each territory must question the impacts that the dominant conception has had in each geographical and cultural context.

AUTHORSHIP CONTRIBUTION

Fidel Antonio Carvajal-Suárez, conceived the research idea, conducting a bibliographic exploration of the topic. Jenny Luliet Moreno-Flores, supported the methodological design. Both worked in the inductive process of collecting information, processing and theorizing the

information, articulating the article proposal, accompanied in the editorial review until its acceptance for publication.

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REFERENCES

Alonso-Betancourt, Luis Aníbal, Larrea-Plúa, Johnny Javier, & Moya-Joniaux, Carlos Augusto. (2020). Metodología para la formación de competencias profesionales en estudiantes universitarios mediante proyectos formativos [Professional competency training at the university through formative projects]. *Transformación*, *16*(3), 544-566.

Arroyave-Puerta, Adriana & Marulanda-Valencia, Flor. (2019). Ecoemprendimiento, sostenibilidad y generación de valor [Eco-entrepreneurship, sustainability and value creation]. *Revista Escuela de Administración de Negocios*, (87), 155–172. https://doi.org/10.21158/01208160.n87.2019.2411

Batista-Ribeiro, Crystiane, Saboia, Vera María, Moniz, Marcela de Abreu, Koopmans, Fabiana Ferreira, Ramos, Luciano Godinho Almuinha, & Donizete Vago. (2018). Investigación-acción y Enfermería en educación ambiental: reflexión metodológica [Action-Research and nursing in environmental education: methodological reflection]. *Index de Enfermería*, *27*(3), 147-151.

Campoverde-Robledo, Flor Nohemy, & Soplapuco-Montalvo, Juan Pedro. (2022). Cultura ambiental sostenible en la educación [Environmental culture in education for sustainability]. *Revista Científica de la UCSA*, *9*(2), 112-128. https://doi.org/10.18004/ucsa/2409-8752/2022.009.02.112

Castro-Sánchez, Fernando de Jesús, Vega-Falcón, Vladimir, Verano-Gómez, Nancy Clara, & Camaño-Carballo, Liset. (2022). Dimensión cultural en el currículo. Análisis de una experiencia [Cultural dimension in the curriculum. Analysis of an experience]. *Conrado*, *18*(85), 151-159.

Colón-Ortiz, Abner J. (2016). El efecto del currículo oculto de educación ambiental en estudiantes de educación superior [The effect of hidden curriculum of environmental education in higher education students]. *Revista de Investigación*, *40*(88), 166-175.

Cortés-Ramírez, Ángela Elvira, & González-Ocampo, Luz Haydeé. (2017). Dimensión ambiental en el currículo de educación básica y media [The Environmental Dimension in the Primary and Secondary School Curricula]. *Educación y Educadores*, *20*(3), 382-399. https://doi.org/10.5294/edu.2017.20.3.3

Dewsbury, Bryan, & Brame, Cynthia. (2019). Inclusive Teaching. *CBE life sciences education*, *18*(2), fe2. https://doi.org/10.1187/cbe.19-01-0021

Márquez-Delgado, Dora Lilia, Hernández-Santoyo, Alain, Márquez-Delgado, Luis Humberto, & Casas-Vilardell, Mayra. (2021). La educación ambiental: evolución conceptual y metodológica hacia los objetivos del desarrollo sostenible [Environmental education: conceptual and methodological evolution towards the sustainable development goals]. *Revista Universidad y Sociedad*, *13*(2), 301-310.

Moreira-Arenas, Alexis, Ferreira-Pinto, Israel, Obregón-Reyes, Jennifer, & Quiero-Bastías, Máximo. (2022). Claves para transformar el currículo en el sistema escolar chileno tras la pandemia [Keys for transforming the curriculum of the Chilean education system after the pandemic]. *Íconos. Revista de Ciencias Sociales*, (74), 53-72. https://doi.org/10.17141/iconos.74.2022.5310

Pulido-Capurro, Víctor, & Olivera-Carhuaz, Edith. (2018). Aportes pedagógicos a la educación ambiental: una perspectiva teórica [Pedagogical contributions to environmental education: a theoretical perspective]. *Revista de Investigaciones Altoandinas*, *20*(3), 333-346. https://dx.doi.org/10.18271/ria.2018.397

Tovar-Cardozo, Miguel Ángel, Castañeda-Muñoz, Julián David, Sánchez-Pimentel, Henry, & Torrejano-Peralta, Liliana Yojana. (2021). Currículo y cultura ambiental desde el contexto de la ética del cuidado: un estudio de caso en Colombia [Curriculum and environmental culture from the context of the ethics of care: a case study in Colombia]. *Conrado*, *17*(83), 488-498.