The lower section of the Guatapurí River as a scenario for education and sustainable tourism recreation

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Abstract: The purpose of this article was to analyze the lower section of the Guatapurí River as a setting for environmental education and sustainable tourist recreation in the Official Educational Institutions Nelson Mandela, José Eugenio Martínez, and Joaquín Ochoa, located in the municipality of Valledupar, Cesar department, Colombia. The study was developed from a hermeneutic-phenomenological perspective under a qualitative approach, adopting the hermeneutic method. The key informants included ten (10) teachers affiliated with the aforementioned educational institutions and sixteen (16) students enrolled in these schools. Data collection techniques included in-depth interviews and focus groups.

The findings revealed the need to strengthen environmental education within educational institutions through community participation aimed at environmental conservation. In this context, pedagogical responsibility emerged as a fundamental element for fostering environmental awareness both inside and outside the school setting. Likewise, the study showed that environmental care in the classroom context is closely linked to the ethical commitment and professional vocation assumed by teachers in their educational practice, contributing to the protection and preservation of the Guatapurí River ecosystem

Keywords: Environmental education, tourist recreation, Guatapurí River...

Introduction

The care of water sources represents an objective of global interest, given its importance as a strictly indispensable resource for the sustainability of life on the planet. However, humanity is witnessing the growing threat that hangs over the availability of water as an unstoppable effect of climate change, which is why, throughout history, various initiatives have been taken at the international level within the educational context, with the intention of understanding the complex dynamics of the environment in its interaction with human beings.

In this regard, Valero and Febres (2019) note that educational trends refer to the study of the natural environment as "... a source of knowledge and training of the human being". Under this premise, it can be said that the natural environment – seen as an integral being in whose gear the human being is located – is the best resource available and within everyone's reach, whose study, care, protection and sustainability must be approached from the educational point of view in the light of a holistic vision, where the whole is more valuable than the parts. discarding the anthropocentric theory, which promulgates the human being and his interests as the center of everything, which derives in a dependence of everything else on his needs. (Hernández, 2020, s/n).

According to Valero and Febres (2019), in social dynamics and in its technological development over the long course of history, the environment appears as the support that energizes life in all processes, which leads to reflection on the urgent need to care for it, protect it and work in favor of its sustainability. in the face of the undeniable evidence of the deterioration suffered by natural ecosystems. For this reason, during the last two decades, international organizations have focused their attention on the search for actions to rediscover the society-nature balance, by virtue of the acceleration and planetization of the negative effects on the various ecosystems, a situation that requires rethinking the ethical aspects implicit in human actions on the natural environment. in favor of bequeathing the Earth in balance to the new generations.

In this sense, the emphasis falls on environmental education worldwide as the most expeditious way to achieve it, in view of which, environmental protection is included in the 2030 Agenda for Sustainable Development, as one of its dimensions together with economic development and social inclusion in the intentionality that all member countries of the United Nations (UN). From there, take concrete actions aimed at achieving efficiency in the use of water ecosystems, in the aim of eliminating, or at least minimizing the inequality felt in the availability and use of water resources, as well as reducing the impact of pollution on numerous bodies of water predominant in planetary spaces. which unfailingly requires the implementation of strategies aimed at creating citizen awareness from the perspectives of environmental education for the conservation and sustainability of rivers.

For the purposes of this study, it is particularly important to highlight the benefits in the lower section of the Guatapurí River (lower basin) as a space for the development of tourist recreation based on environmental education, which within the framework of water resources are categorized as the main source of water for human, animal and plant consumption. in addition to being an ideal resource for the development of recreation and tourism; But beyond that, rivers make it possible to obtain electrical energy for industrial use and at home, among other benefits, which gives them relevance for the socio-economic development of the countries that have water wealth at their disposal, given their character as contributors to the growth and development of their environments. (Correa, López, & Vergara, 2020).

In particular, Colombia, according to studies carried out by Figueroa (2010), despite the current problems related to water resources, still retains its position as a global water power, it is recognized as one of the countries with great water potential, as it has at least 737,000 bodies of water, including rivers, streams, streams and lagoons; the most recent water supply for the territory reaches the figure of 910 Km3 per year, while in extreme hydrological conditions (supply in dry year) it does not exceed 1,240 Km3 per year. There are about thirty (30) basins and seven hundred and fifty thousand (750,000) micro-basins.

However, in Colombian society, as in most countries, there are practices that lead to the inappropriate use of this resource at some point. Waste and pollutants are constantly released that penetrate even groundwater or are dumped into lakes and seas. This translates into water pollution, characterized by the presence of chemical or other components in a density higher than the natural situation, so that it does not meet the conditions for the use that would have been intended for it in its original state (Ecolec Foundation, 2021).

In this sense, it is worth noting that pollution causes damage to the water ecosystem, with the consequent harmful effects on water quality, affecting the macroinvertebrate animal biome, life forms typical of rivers, whose biological function is essential in the transfer of energy to the higher consumers of food webs, which, By eating each other, they generate the necessary nutrients for the environment around them. The same author adds that when this natural process is not fulfilled, the environmental crisis of water originates, understood as the environment in which the relationship of biological communities in water develops.

In accordance with the above, Correa, López, and Vergara (2020) state that the water potential of rivers is not being adequately treated by Colombian society, contributing to their pollution, the immediate consequence of which is the deterioration of the flora and fauna that make it up. At this point, the Water *and Ecosystems* report prepared by the Development Bank of Latin America and the Caribbean (CAF) (2022), with the support of The Nature Conservancy presented on its news portal, is relevant, where it highlights that ecosystems are key to achieving water security and, therefore, Latin America must influence the protection and conservation of ecosystems to guarantee water security and increase productivity.

The report mentions the very particular functions of water regulation and purification of these ecosystems, whose influence reaches a high degree of participation in the quantity and quality of water resources, since they play a key role in achieving water security that would contribute to improving the health and well-being of the inhabitants of vulnerable areas. as well as the production of goods and services and the livelihoods of the most disadvantaged population.

Despite its importance, its sustainability is at permanent risk, due to the recurrent threat, which according to CAF (2022), derives from the development of agricultural production, mining exploitation and the advance of unplanned urbanization in countries such as Argentina, Chile or Colombia. In its annual report presented in 2022, the same organization states that: Poor water quality or inadequate sanitation compromise the livelihoods and opportunities of millions of people in Latin America and the Caribbean: 17 million Latin Americans and Caribbeans (3% of the population) have limited access to water or consume it from unsuitable sources. In addition, 430 million (66% of the population) do not have access to safe and adequate sanitation. Residents of rural areas and informal urban settlements face the greatest deprivation, especially women and children.

The above leads to reflect on the need to form environmental awareness in the population. Therefore, it is appropriate to make intelligent decisions regarding the search for opportunities and training alternatives that are innovative and therefore interesting, that awaken the desire to know more, that move towards motivation, towards the need to recover and maintain water sources in communities. As mentioned, the most expeditious way to achieve this is education oriented towards the internalization of citizen responsibility towards the use without abuse of the environment, and of the water wealth offered by innumerable animal and plant species that, being in balance, confer ecological harmony to the system, so as to enable the sustainability of water sources.

It should be noted that healthy water, according to Álvarez and Pérez (2007), must contain a balanced amount of nutrients and normal fluctuations in salinity and temperature, and at the same time a high percentage of oxygen, in addition to receiving enough sunlight necessary for the adequate growth of organisms. This means that water pollution caused by damage or alteration of its state under normal conditions, and the loss of river buffer zones, is a problem for the health of all living beings that inhabit the planet.

From the perspective of the relevance that can be seen in the above, solutions are required to the deterioration of water sources; however, it is a problem whose solution will be the response to the

multidisciplinary action of the different public and private organizations and institutions in terms of the long term, for which the researcher of this study considers that this must be addressed, in the short term, from the educational action at all levels of the national education system. However, in the opinion of Torres (2007), although it is long-standing, the creation of citizen awareness for the care of water sources from environmental education in Colombia constitutes a decontextualized pedagogical practice, where didactics is scarcely innovative as it focuses fundamentally on theorizing, on the conceptual, whose results have been not very encouraging.

In the same vein, Díaz and Cano (2006) consider that environmental education, in general terms, has failed due to the theoretical conception of a teacher who notes and exposes concepts that often do not even match the real, because they are the product of content that is currently not true, so that in more specific terms, it is pertinent to say that in the classroom spaces of the secondary education educational institutions located in the municipality of Valledupar, Colombia, there is a great discrepancy between what *should be* and *what is*, in terms of addressing issues such as the conservation, care and sustainability of the environment and specifically of rivers.

This means that there is a great gap between what is to be achieved and the didactic procedures developed for teaching in this area of knowledge; since the predominance of theorization hinders the achievement of truly significant learning, ignoring that it is about creating citizen awareness in favor of a healthy environment, implying in it the maintenance and sustainability of river water ecosystems, and with it the preservation of the life of aquatic macroinvertebrate organisms as indicators of water quality in rivers.

As can be inferred, this type of content requires a didactic model whose pedagogical procedures are mostly practical, leading to the active participation of students in the development of projects from collaborative learning, based on the principles of research methodology, according to the objectives designed for the area, whose ultimate goal seeks to create citizen awareness for the conservation of the natural and cultural heritage of the students. bodies of water.

In the opinion of Martínez and Martínez (1998), the feasibility of caring for and sustaining rivers as sources of life, seen as a teaching material, will depend on educational action since, from the general point of view, it is the best way to organize social and environmental transformation, since it is its goal to reproduce social values and techniques that are tributary to educational purposes. However, in the specificity of the educational process, in the classroom environment, the didactic action is far from focusing on: (a) internalization of affections for the environment, (b) sense of belonging, (c) sensitivity to the socio-environmental values of river ecosystems, (d) promotion of active participation in the processes of diagnosis and improvement of river systems as healthy water sources, all of which represents the duty of environmental education, whose didactic action should focus on the appropriation of values, habits, behaviors and attitudes that favor the maintenance and sustainability of river water bodies.

The gap between what *should be* and *what is*, in the *Nelson Mandela, José Eugenio Martínez and Joaquín Ochoa* Official Educational Institutions, in the municipality of Valledupar, department of Cesar, Colombia, deepens when theorizing the pedagogical development of the contents related to the environmental conservation and sustainability of water bodies predominates in the classroom dynamics. specifically of rivers; The weakness of the recognition of the relevance of this issue in the teaching work is characteristic, where little is done in terms of the formation of collaborative study teams that aim more towards the practical execution of activities aimed at the defense and care of the different water sources existing in the locality.

It is clear that in the municipality of Valledupar educational programs are deserved that dynamize the care of the environment and its resources, including rivers and the macroinvertebrates coexisting in them, given that due to their biological functions they are guarantors of good water quality. The teaching processes carried out within the framework of content related to the environmental context and its care, make the environmental reality intangible, distancing students from the sense of identity, responsibility and solidarity with the environment in natural spaces.

Therefore, it is required that the pedagogical tasks framed in environmental education develop values, habits, behaviors and attitudes that favor the sustainability of the rivers in the municipality, especially the Guatapurí, so that the formation of citizen awareness for the sustainability of the environment awakens the motivation of the social actors involved in the teaching and learning processes of this important area of knowledge. with the collaboration and support of the different curricular areas, in order to achieve the objectives of the area, contributing to the development of actions that can be more effective, because in short, the environment belongs to everyone and we must all participate in its protection.

With respect to environmental education, several authors point out the relevance of environmental teaching processes based on the joint work of all teachers, constituting socio-environmental problems in an excellent way to make knowledge about the existing reality practical. In the perspective of the same author, when river water sources are part of urban stretches, they could be used to the maximum as a didactic resource for teaching in the area of environmental education. However, it is evident that didactic actions concentrated in the classroom without direct relation to the environment hardly awaken the sensitivity of students with respect to the environmental problem, since in the classroom it is handled as a very abstract aspect.

Therefore, it is necessary to dynamize the curricular contents related to environmental education from the transversality and transdisciplinarity of other areas related to the protection of the environment, river water sources and their ecosystem; This would create the possibility of turning the interest of all the actors in the educational act towards wanting to know more about a concrete reality of environmental care, in favor of a future in harmony and balance between society and nature.

It should be noted then that the urban rivers that run through a stretch, or that run through the entire city of Valledupar, are directly affected by the physical environmental deterioration of the environment in which they are located, a circumstance that in turn has a negative impact on the quality of the waters, whose immediate consequence is the direct impact on macroinvertebrate organisms. giving rise to a water ecosystem also in the process of gradual and progressive deterioration. The water sources in the town of Valledupar have become landfills for municipal and industrial liquid waste, impeding environmental sustainability, which puts at risk life, human health, biodiversity, industry, tourism, commerce, apart from the fact that the forests or green areas existing in the vicinity of these water streams are affected by the same anthropic activity. preventing residents and visitors from enjoying a harmonious natural environment. (Flores, 2020).

The above can be seen in the Guatapurí River, a water source that runs for an urban stretch of several kilometers, bordering the city along the northeastern strip where it meets the neighborhoods *"Pescaito", "Paraíso 1 and 2", "Nueva Colombia", "9 de Marzo", "Zapato en Mano" and "Canta Rana"*. In this section of the Guatapurí is located the Hurtado Spa, whose dimension reaches 1.7 linear km, (Martínez and Zequeira, 2018).

In their study regarding the *Hurtado Resort* , the aforementioned researchers explain that the decision to establish this spa on the Guatapurí River, responded to the aspirations of a commercial-tourist development in the place, which has generated damage in the adjacent forests by virtue of logging, an activity consisting of opening more spaces according to the requirements of the recreational and tourist activity that is already uncontrolled. generating an impact on the quality of its waters, consequently affecting the fauna and floristic biodiversity of the place. To this situation is added that the sections that run through the aforementioned neighborhoods are affected by the anthropic activities of the inhabitants of the sector and other locals who frequently live in their surroundings, altering the balance of the ecosystem.

It can also be said that the basis of the problem referred to here derives from the scarce or non-existent training in the field of environmental education, a situation that is evident in the harmful actions of citizens on the environment of this area of the municipality, whose constant abuse is indicative of the lack of knowledge regarding the benefits that the Guatapurí River would generate to the population centers that it crosses along its route. whose care, protection and sustainability represents the possibility of the supply of drinking water, recreation, scenic beauty, biological diversity

among other intangible values.

However, it is ignored that subjecting this valuable source of water to the effect of harmful polluting elements has become a latent environmental threat for thousands of people, since its fauna and plant wealth has suffered the gradual onslaught of inadequate, polluting procedures and activities, which are far from the care it deserves. Regarding the benefits Pinto, Vega and Cuello (2022) state that:

"The Hurtado resort, which is one of the most visited tourist areas to recreate and have fun among refreshing waters and typical foods, visitors can also bathe, walk among beautiful spaces that the resort offers to share and enjoy with family and friends for an unforgettable tourism of this Colombian region" (p.59).

In this context, it is evident the need to assume as a responsibility of all the inhabitants of the municipality of Valledupar the care, preservation and maintenance of this water source, with prevalence of the protagonism that corresponds to teachers in this regard regardless of the educational level and the curricular area in which they work. in order to contribute strategies, projects, contents, models, that address the issue of environmental preservation and the sustainability of the Guatapurí River, in ethical terms as the basis of its pedagogical action in the perspective of the recovery, conservation and sustainability of the ecosystem that contains it.

Of course, ensuring that students have active participation and awareness of their care in the light of respect for the life of the macroinvertebrates that coexist there, which will contribute to forging environmental citizen awareness as a way of responding to the problems explained here, carrying out forceful actions capable of making students identify and develop a sense of belonging and love for their habitat, so that the results of the pedagogical action are manifested in the harmonious relationship between people and their environment, with a view to making it sustainable. However, the absence of energetic programs in favor of the protection of water sources and their fauna and floristic richness is observed.

It should be noted in this regard that this seems to be a task that is always postponed and is only limited to specific moments of the school year, where the teaching management related to this issue is characterized by its indifference and passivity to the principles emanating from the United Nations Organization (UN), through its agency for Education, The Faculty of Science and Culture (UNESCO) when it emphasizes that students must participate and acquire theoretical and practical knowledge for the promotion of sustainable development and the development of a culture of identity for the environment and water sources, principles set out in numeral 4, paragraph 4.7, which specifies the responsibility of governments and with them of educational systems, to train for the preservation of the environment and its different habitats.

In the same vein, Torres (2007) states that educational institutions assume the development of environmental programs in a simplistic way, underestimating important contents, limiting their "study" to the celebration of an environmental calendar. In other words, the "training" related to the care of the environment and water, for example, may not transcend information billboards, cleaning days around the school, homage to the day of water, land, trees, billboard competitions, a festival on recycling, promoting the presentation of crafts, talks, among other activities, which in themselves are not bad, only that the care of the environment, its rivers and the life they contain, should not be reduced to a momentary celebration; It is necessary to develop awareness, delve into the issues, be more constant and passionate about the care and preservation of rivers, seeking their sustainability.

It is assumed that a well-conducted environmental education must overcome particular acts or events of the week or day of celebration; It is strictly necessary, it is urgent to innovate, to seek greater perseverance, tenacity, persistence in the teaching action related to environmental education, since it is intended to create awareness in students regarding the connection between the conservation of the environment, the sustainability of water and the subsistence of living beings, in the pedagogical intention that learning is truly meaningful

It is worrying that school and citizen environmental projects in the city of Valledupar do not take advantage of water sources as teaching environments, ignoring that these ecosystems can be assumed as pedagogical resources, since they lend themselves to the realization of practices in situ, a perfect complement to achieve significant learning, while students in contact with the natural environment,

they can better understand the inconvenience of environmental deterioration, and in this way internalize, become aware of their responsibility as citizens in the preservation of the water ecosystem.

Learning to be, learning to learn and learning to do, from active participation, constitute the pillars on which changes in behavior, values and lifestyles are built, propelling elements of transformative action in the prevention, and attenuation of problematic situations related to the environment, from a pedagogical action where practice is interwoven with theory in the light of a participatory dynamic.

That is to say, the involvement of students in environmental education should focus on addressing environmental problems in the concrete, in the reality of ecosystems, where the actions of observation, diagnosis, review and analysis constitute the greatest specific weight of the study, and not remain in the sole discussion of possible solutions. In this sense, the students who live in the *Nelson Mandela, José Eugenio Martínez and Joaquín Ochoa* Official Educational Institutions, object of this study, must receive guidance and preparation to take action in the face of the environmental problem, and in the case addressed in this study, it is a matter of preparing them for concrete action through tasks and activities oriented to care, preservation and sustainability of water sources in the city of Valledupar, specifically the Guatapurí River.

In this order of ideas, it is highlighted that the health of rivers leads to the sanitation of the fauna life contained in them, specifically the aquatic macroinvertebrate organisms that represent a learning opportunity regarding the balance necessary for their maintenance and preservation, since they make up an innovative didactic bio-tool for environmental education processes. in water resource conservation programs because they enrich knowledge and increase the knowledge required to understand and improve the relationship between human beings and their natural environment.

It is also pertinent to highlight that the study of the behavior and functioning of macroinvertebrates represents a reliable premise that forms a correct starting point for assessing or estimating water quality. However, its pedagogical value to create and reinforce forms of learning with respect to the protection of the environment is ignored; Leaving aside the fact that these specimens offer an invaluable resource to determine the status of water bodies, their conditions and characteristics, which gives environmental contents a novel character, which has not been considered by any existing environmental educational program.

The above indicates that pedagogical projects that promote the analysis and understanding of local, regional and national environmental problems and potentialities, which generate spaces for participation to implement solutions in accordance with the natural and sociocultural dynamics in the municipality of Valledupar, It is possible that they are decontextualized, emerge as simple filler contents in curricular matters on environmental education, conditions that obviously do not lead to successful results.

Environmental education, in the official educational institutions scenarios of the problems described here, does not manage to cross the border of related celebrations, such as, for example, Earth Day, Water Day, Arbor Day, among others. It can be affirmed, then, that the approach to environmental education under a didactic model highly influenced by a traditionalist and behaviorist pedagogy, hinders progress in achieving results for the improvement and sustainability of the environment.

Therefore, the active participation of the Nelson Mandela, José Eugenio Martínez and Joaquín Ochoa educational institutions, based in the municipality, is required, whose teachers are won over to the development of dynamic, integrating teaching strategies, where work in collaborative teams awakens dialogic action, creativity and critical thinking aimed at behaviors that favor the environment; teachers with the intention of proposing solutions to the problems generated on the planet by human societies.

Hence, the ultimate intention of the study seeks to make a significant contribution to the discipline of Environmental Education in the attempt to awaken and strengthen the understanding of social actors, teachers and students, from their individual representation actively participate from the awareness and sensitization regarding the maintenance, preservation and sustainability of the Guatapurí River as a a space for the development of tourist recreation in the municipality of Valledupar,

department of Cesar, Colombia.

Methodological Perspective

The methodological perspective that guided the development of this article was based on the qualitative approach, which seeks to study in depth social phenomena based on evidence that allows us to describe, understand and interpret reality from the experiences and meanings constructed by the subjects. In this sense, Sánchez (2019) points out that the qualitative approach is based on methods and techniques derived from epistemological foundations such as hermeneutics, phenomenology, and the inductive method.

According to Katayama (as cited in Sánchez, 2019), qualitative methodology uses words, texts, speeches, drawings, graphs, and images to understand the social life of subjects from the meanings they attribute to their experiences. From this perspective, qualitative research is developed from the interaction between the researcher and the context, with the purpose of describing, understanding and analyzing the phenomenon studied from perception and human experiences.

In this order of ideas, all research requires an epistemological support that guides the methodological route of the study. Therefore, this research was approached from the phenomenological-hermeneutical perspective, because it allowed us to understand the meaning of human experiences related to environmental awareness, care and sustainability of water sources as spaces for life and learning.

From this perspective, the study focused on the understanding of the educational and environmental dynamics linked to the lower section of the Guatapurí River as a scenario of environmental education and sustainable tourism recreation in the Nelson Mandela, José Eugenio Martínez and Joaquín Ochoa Official Educational Institutions of the municipality of Valledupar, department of Cesar, Colombia.

In correspondence with the above, the hermeneutic method was adopted, which allowed the interpretation of words, discourses and experiences expressed by the key informants, favoring the understanding of the phenomenon studied. Its use was pertinent due to its coherence with the qualitative approach and with the intention of interpreting the meanings constructed by the participants in relation to environmental education and the preservation of the Guatapurí River ecosystem.

Research Scenario and Key Informants

The research scenario constitutes the context where the research process is developed and in which the researcher interacts with the social actors involved in the phenomenon under study. In this regard, Taylor and Bogdan (1996) point out that the ideal scenario for research is one that facilitates the researcher's access, makes it possible to establish relationships of trust with informants, and allows the obtaining of pertinent information based on research interests. In response to this, the study was carried out at the Nelson Mandela, José Eugenio Martínez and Joaquín Ochoa Official Educational Institutions, located in the municipality of Valledupar, department of Cesar, Colombia.

In relation to key informants, Martínez (2014) states that their selection should be carried out intentionally, seeking to obtain significant and pertinent information for the understanding of the phenomenon studied. In this sense, two groups of informants participated:

A. Teachers

The group was made up of ten (10) teachers assigned to the educational institutions under study. To guarantee confidentiality and protection of the identity of the participants, they were identified by alphanumeric codes: D1, D2, D3 (...). The inclusion criteria considered were:

Work at the Basic Secondary Education level in one of the participating educational institutions.

Have a minimum of three years' experience in teaching Environmental Education or related areas.

Voluntarily express their willingness to participate in the research through an in-depth interview.

B. Students

The group was made up of sixteen (16) students organized into four focus groups of four participants each, belonging to the sixth (6th) and seventh (7th) grades, given that the competency standards and basic learning rights include content related to environmental education at these educational levels. The participants were identified by the codes E1, E2, E3 (...), in order to preserve their identity. Voluntary acceptance to participate in the study through the focus group technique was considered as inclusion criteria.

Reliability of Information

To guarantee the reliability of the information, triangulation was used, following Martínez (2006), who points out that this contrast procedure allows the study to be given credibility by confronting different perceptions, favoring consistent and valid interpretations. In this sense, the triangulation was based on the collection and analysis of the perceptions, testimonies and opinions provided by the key informants, which were contrasted with theoretical references linked to environmental education and the preservation of water sources.

This process allowed interpreting the findings from the researcher's position in relation to the lower section of the Guatapurí River as a scenario for environmental education and sustainable tourism recreation. Likewise, the information obtained was assumed as a significant contribution to the formation of an environmental awareness within the socio-educational process developed in the Nelson Mandela, José Eugenio Martínez and Joaquín Ochoa Official Educational Institutions of the municipality of Valledupar, department of Cesar, Colombia.

Information Collection Techniques and Instruments

Information collection techniques are defined by Tamayo and Tamayo (2003) as the operational part of research design, as they refer to the procedures, conditions, and spaces used to obtain data (p. 114). Accordingly, in the present study, in-depth interviews and focus groups were used as techniques for collecting information. The in-depth interview was applied to segment A, made up of the teachers, and allowed the researcher to approach the experiences, perceptions and meanings constructed by the informants in relation to the phenomenon studied. This technique facilitated the understanding of the participants' experiences from their own perspective and educational context.

For its part, the focus group technique was developed with segment B, made up of the students, favoring the interaction between the participants and the researcher. Through this dynamic, opinions, perceptions and experiences related to the Environmental Education practices developed in educational institutions were collected.

Information Analysis

Once the information collection techniques were applied, the analysis was carried out through a process called theorization, which, according to Martínez (2014), is the organization and review of the recorded notes and the information obtained through the recordings and videos, which allowed the appreciation of expressions, testimonies, knowledge, knowledge and the feelings of the key informants regarding the social reality that was the object of the study. In this perspective, according to the aforementioned author, procedures were taken into account that are classified into four fundamental stages: categorization, structuring, contrast, and theorization itself.

Procedure for Approaching Research

The research process was carried out, according to Rodríguez, Gil and García (1999), where different stages were established to carry out the research process. They were developed in four phases that occur more or less simultaneously: preparatory phase, fieldwork phase, analytical phase and informative phase. These occur at different levels of development, which means different stages and moments. However, they never happen in a linear fashion, because the entry of a phase can also revert to the previous phase (see Figure 1).

Figure 1

Research procedure

Note: Taken from Rodríguez, Gil and García (1999) and adapted by the author. In original language (Spanish)

Findings

In this section, it is oriented towards the detailed description and explicitation of the research moment that requires contrasting the contributions of the key informants, against the known theoretical approaches regarding the subject of the study, from which the researcher's perspective emerges, which is known as triangulation, which, as already mentioned, endorses the reliability of the information collected according to the purpose that originated the research.

The analysis was carried out based on the extraction of the expressions and terms of greatest repetition in the answers obtained during the in-depth interview, and from the contributions of the focus groups, from which the Initial Categories, the Emerging Categories and the Subcategories (see table 1) are derived, related to the lower section of the Guatapurí River. A space for the development of tourist recreation based on environmental education aimed at the Nelson Mandela, José Eugenio Martínez and Joaquín Ochoa Official Educational Institutions of the municipality of Valledupar, department of Cesar, Colombia.

It is important to point out the need to present the integrated procedures in a joint vision of all the key informants in favor of the understanding, interpretation and linking of the categories and subcategories from the most significant theoretical references. Therefore, the processing of the contributions received from key informants implies the reduction and saturation of the information collected during the in-depth interviews.

Table 1

Initial Categories. Emerging Categories. Subcategories

Starting Categories	Emerging Categories	Subcategories
Environmental Education	Pedagogical Praxis	Pedagogical responsibility
		Teaching and learning strategies
		Practical ecological experiences
		Eco Awareness
	Curriculum	Comprehensive training
		Interdisciplinarity
		Environmental values
River Water Sources	Linkage School-Community	Collaborative joint work
		Cultural habits at home
Guatapurí River	Guatapurí River Ecosystem	Ecological Practices in the Field
		Collective responsibility

Note: Prepared by the author

Emerging Pedagogical Praxis Category

The pedagogical praxis subcategory, understood as the pedagogical task, involves what the teacher does, how, when and why he does it, which configures practices that in turn involve the teacher's reflections, which, in turn, involve not only knowledge, but also feelings, beliefs and values that are manifested in their actions in the classroom and that in some way have an impact on students. (see table 2).

Seen in this way, it can be said that in pedagogical praxis, strategies, resources, modes of interaction are combined, used by the teacher as means to achieve the educational purpose. Therefore, the teacher must adapt to the demands, needs and personal interests of his students and, likewise, to the social demands of the community, to scientific and technological changes and innovations, to the evolution of culture within society. This means that pedagogical praxis is dynamic, changing and flexible. It is not rigid or static.

Table 2

Matrix of the Initial Category Pedagogical Praxis

Starting Categories	Emerging Categories	Theoretical contributions	Contributions of the researcher
Environmental Education	Pedagogical Praxis	From the point of view of the depth with which it is assumed, responsibility is a primordial principle that can support an ethics of response to the demand of the other, which according to Melich (2001),	The care of the environment from the context of the classrooms represents a concern that rests on the pedagogical responsibility assumed by the teacher when teaching this area of knowledge, since his ethical and moral sense is the basis of his commitment and his

		Arriagada (2016), refers to the fact that in the teacher-student didactic relationship it is forgotten that the essence of the educational relationship is and must be ethical, given the encounter between the one who is known, responsible for the other.	vocation of service. Therefore, that is, a pedagogical practice aimed at the defense, care and maintenance of the environment contemplates the teacher as a social and socializing being, promoter of inquiry, critical reflection and the solution of environmental problems in his school and in the community to which he belongs.

Note: Prepared by the author

Emerging Category: Resume

This subcategory in the educational curriculum is nothing more than the curriculum or general educational project containing the ideological, socio-anthropological, epistemological, pedagogical and psychological contents and conceptions that determine the objectives of the school-based education, which aims to incorporate the culture that is to be promoted, in response to the following dilemmas: (a) What should be taught (cultural legacy, disciplinary selection of content) or what students should learn (learning outcomes, final behavioral objectives, competencies), (b) what should be taught or what is actually taught, gap between what is reflected on paper and what is actually implemented, (c) what should be taught and how (strategies, teaching methods and processes), (d) something delimited and specific that is then applied, or something open that is delimited in the same process of application; which can be dynamic or static, which is created and recreated by teachers and students.

In other words, this means that the educational curriculum responds to the intentionality of a given society. Therefore, the students' graduation profile is reflected in their purposes, considering what they are expected to be able to do once the educational process is completed. (see table 3)

Table 3

Initial Category Matrix Curriculum

Starting Categories	**Emerging Categories**	**Theoretical contributions**	**Contributions of the researcher**
Environmental Education	Curriculum	The IBE, in the document Reflections in Progress No. 2 on fundamental and current issues of curriculum and learning, defines the curriculum as a political and social agreement that guides the educational objectives of a society, considering local, national and global needs.	The educational curriculum guides what, how and why students learn, articulating knowledge, skills and values necessary to respond to the social, cultural and environmental demands of the context. From this perspective, environmental education requires a curriculum that promotes significant learning, ecological awareness, and commitment to the preservation of water sources and the natural environment.

Note: Prepared by the author

Emerging Category: School-Community Linkage

School-community bonding occurs when the boundaries between both socio-cultural contexts are broken, where the relationship is established from the continuous and constant exchange between the school institution and the social context in which it is based. It is the social environment that significantly values the educational institution by virtue of that close relationship that allows them to nurture and support each other, where the institutional values transmitted to the student conglomerate are disseminated and shared within each home, creating culture, generating information, delivering knowledge, sowing values, all oriented to the solution of problems that are common to them. In other words, the school needs the community environment where it is located, to fulfill its social function, and the community environment needs the school as a transforming agent of social reality, through the educational processes that are developed in classroom spaces. From this point of view, the achievement, at some point, of the long-awaited social transformation depends on the pedagogical, training and mediation actions that can be carried out with the active participation of the community, with the understanding that this transformation will materialize in a better quality of life translated into well-being and stability of the collective.

Table 4

Matrix of the Initial Category School-Community Linkage

Starting Categories	**Emerging Categories**	**Theoretical contributions**	**Contributions of the researcher**
River Water Sources	School-Community Linkage	Mireles (2003) states that school-community linkage implies the active participation of parents and community actors in the organizational and training processes of the educational institution. For their part, González and Hernández (2003) point out that this relationship must be built from a dynamic of reciprocal interaction, aimed at promoting processes of social organization and attention to the needs of the context.	The link between the school and the community represents a fundamental element to promote actions aimed at the preservation of the Guatapurí River ecosystem. From this perspective, educational institutions can strengthen participatory pedagogical practices that integrate students, teachers and the community in the construction of an environmental culture based on the responsible use of water sources and the protection of the natural environment of the municipality of Valledupar.

Table 3 (cont.)

Starting Categories	**Emerging Categories**	**Theoretical contributions**	**Contributions of the researcher**
River Water Sources	School-Community Linkage	González and Hernández (2003) conceive of school-community linkage as a relationship aimed at strengthening processes of social organization and citizenship training, in response to the needs of the context.	The articulation between school and community favors the development of educational practices aimed at the care of water sources and the construction of an environmental culture based on the responsible use and preservation of river ecosystems.

Note: Prepared by the author

Emerging Category: Guatapurí River Ecosystem

The Guatapurí River connects characteristic ecosystems of the tropical dry forest, the Zapatosa swamp and desert areas of the department of La Guajira, standing out for its fauna and floristic richness. It is born in the Sierra Nevada de Santa Marta, in the Curigua lagoon, and crosses the city of Valledupar, maintaining a close historical, cultural and symbolic relationship with the *Kankuamo and Wiwa indigenous peoples,* as well as with the traditions and legends of the vallenato region.

The name Guatapurí, which in *the Chimila* language means *"cold water"*, refers to the characteristics of its waters. During its course, it receives different tributaries and forms an important water system that benefits numerous rural, indigenous and peasant communities. In particular, the lower basin of the *Guatapurí* River fulfills essential environmental, social and economic functions related to water supply, recreation, tourism and the maintenance of biodiversity.

However, the ecosystem faces various problems associated with inadequate land use, the decrease in the quality and availability of water resources, and the implementation of productive models that affect the strategic ecosystems of the basin. These dynamics generate pressure on natural resources and have a direct impact on the communities and the environmental balance of the lower section of the *Guatapurí River.*

Table 4

Matrix of the Initial Category Ecosystem ofthe Guatapurí River

Starting Categories	**Emerging Categories**	**Theoretical contributions**	**Contributions of the researcher**
Guatapurí River	Guatapurí River Ecosystem	The formulation of the POMCA of the Guatapurí River and CORPOCESAR (2019) They point out that the lower basin presents problems associated with inadequate land use, unsustainable productive activities and urban growth, factors that affect environmental services and the balance of the ecosystem.	The deterioration of the Guatapurí River ecosystem represents an opportunity to strengthen environmental education processes from practical experiences that allow students to understand problems in their environment and develop ecological awareness aimed at the preservation of water sources.

Note: Prepared by the author

Conclusions

The findings of the study made it possible to understand that environmental education is a fundamental axis to strengthen processes of awareness and community participation aimed at the preservation of the ecosystem of the Guatapurí River. From this perspective, educational institutions play a strategic role in the formation of environmental awareness, promoting pedagogical actions that transcend the school space and favor the collective commitment to the care of water sources and the natural environment.

Likewise, it was evidenced that the pedagogical responsibility of the teacher represents a central element in the construction of educational practices aimed at environmental protection. In this sense, the ethical and formative commitment of teachers contributes to the development of values, attitudes and behaviours favourable to the conservation of the environment, especially through learning experiences linked to the social and ecological reality of the context.

Similarly, the Guatapurí River ecosystem has important environmental, social and cultural potentialities that make it a favorable space for the development of environmental education processes

and sustainable tourism recreation. Its natural wealth, the ecosystem services it provides, and the historical and cultural relationship that communities maintain with this tributary highlight the need to promote conservation strategies and responsible use of its resources.

The results also allowed us to reflect on the persistence of social practices that continue to affect the environmental balance, despite scientific advances and permanent access to information. This situation shows the need to strengthen educational processes that favor a more conscious and responsible relationship between people and nature.

Consequently, the teaching and learning processes related to environmental education need to transcend exclusively theoretical dynamics and promote training experiences of a practical, participatory and contextualized nature. This implies developing activities that bring students closer to the environmental problems of their environment, favoring the construction of meaningful learning and the strengthening of eco-awareness.

Finally, the protection of the environment and water sources should not be assumed only as an institutional or regulatory responsibility, but as a collective commitment that involves communities, families, educational institutions and different social actors. In this framework, the lower section of the Guatapurí River can be consolidated as a scenario for environmental education and sustainable tourism recreation, based on social participation, respect for nature and the preservation of river ecosystems..

References

Álvarez C., Sergio and Pérez R., Lucilizabeth (2007) Evaluation of water quality through the use of aquatic macroinvertebrates in the Yeguare sub-basin, Honduras. University of Zamorano, Tegucigalpa, Honduras. Available: https://bdigital.zamorano.edu/server/api/core/bitstreams/

Development Bank of Latin America and the Caribbean (CAF) (2022). Annual Report 2022. Available: https://www.caf.com/es/especiales/impacto-caf/areas-de-accion/agua-y-saneamiento/#:~:text=La%20mala%20calidad%20del%20agua,cada%201.000%20ni%C3%B1os%20nacidos%20vivos.

Corporación Autónoma Regional del Cesar (CORPOCESAR) (2019). Formulation of the Pomca of the Guatapurí River – Cesar. Available: https://www.corpocesar.gov.co/files/FaseFomulacion_Guatapuri.pdf

Correa, L. López, L, Vergara, M. (2020). Research on Social Representations on Water Sources and Conditions for Water Preservation (2013-2019). Revista Espacios. Vol. 41 (29). Available: https://www.revistaespacios.com/a20v41n29/20412924.html

Díaz, J. & Cano, M. (2006). How can the constructivist perspective help us to build knowledge in Environmental Education? Ibero-American Journal of Education, ISSN 1022-6508, No. 41, (Issue dedicated to: Education for Sustainable Development II), pp. 117-131 Available: https://www.researchgate.net/publication/28133545_Como_nos_puede_ayudar_la_perspectiva_constructivista_a_construir_conocimiento_en_Educacion_Ambiental

Figueroa, M. (2010) Potentialities and Challenges of Colombia's Water Resources in Global Governance. Pontificia Universidad Javeriana https://repository.javeriana.edu.co/bitstream/handle/10554/687/tesis303%20%281%29.pdf?sequence=5

Flores, M. (2020) Proposal for a systemic-sustainable-transformative profile model for the environmental pedagogical management of the university curriculum at the National University of San Martín-Tarapoto, César Vallejo University. Academic Doctoral Program in Educational Administration. Peru

Ecolec Foundation. Greenblog Available:https://ecolec.es/Greenblog/actualidad/que-es-lacontaminacionhidrica/#:~:text=La%20contaminaci%C3%B3n%20h%C3%ADdrica%20o%20contaminaci%C3%B3n,destinado%20en%20su%20estado%20original

González, A. M. & Guerrero, M. A. (2008). "PEC: Lessons learned in social participation". International Symposium "Emerging Fields in the Training of Education Professionals". Mazatlan, Sin. Mexico

Pinto, S., Vega, H. and Cuello, N. (2022). Socio-environmental impact of the tourist activities of the Guatapurí River. Electronic Journal Physical Activity and Sciences, Special Edition "Education, Tourism and Environment" Available: https://www.academia.edu/91404246/Revista_electr%C3%B3nica_Actividad_F%C3%ADsica_y_Ciencias_VOLU

MEN_14_N_3_EDICI%C3%93N_ESPECIAL_2022

Hernández I., (2020) The anthropocentric vision. Protection and Rights of the Environment. Article. Foro Jurídico https://forojuridico.mx/la-vision-antropocentrica-proteccion-y-derechos-del-medio-ambiente/#:~:text=El%20antropocentrismo%20es%20una%20teor%C3%ADa,la%20teor%C3%ADa%20que%20nos%20

Leal, M. (2005) Qualitative Techniques of Social Research. Methodological reflection and professional practice. Madrid: Editorial Síntesis S.A

Martínez, R and Martínez, R. (1998). Reflection on education, society and environment. Revista Tópicos, 41, n.p.

Martínez, M. (2006) Science and Art of Qualitative Methodology. Publishers: Mexico, DF: Trillas. Spain.

Martínez, M. (2014). Hermeneutics and Discourse Analysis as a Method of Research Social Paradigm, 23(1), 9-30. https://doi.org/10.37618/PARADIGMA.1011-2251.2002.p9-30.id270

Mireles, H. (2003). "Social Participation in Education". VII National Congress of Educational Research. COMIE. Guadalajara, Jal. Mexico

United Nations (UN). Economic Commission for Latin America and the Caribbean (ECLAC). (2002). Division of Natural Resources and Infrastructure The pollution of rivers and its effects on coastal areas and the sea. Publisher: ECLAC.

Rodríguez, G., Gil, J. & García, E. (1999). Nature of Qualitative Research in Research Methodology. Ediciones Aljibe. Malaga- Spain.

Sánchez, F. (2019). Epistemic foundations of qualitative and quantitative research: consensus and dissent. Digital Journal of Research in University Teaching, 13(1), 102-122. Doi: https://doi.org/10.19083/ridu.2019.644

Tamayo and Tamayo, M. (2003) The Process of Scientific Research. Mexico: Editorial Limusa.

Taylor, Steven J. and R. Bogdan (1996). Introduction to qualitative research methods: the search for meanings, Paidós Básica, 37, Mexico, Paidós-

Torres, M, (2007) Environmental Education in Colombia: A Context of Social Transformation and a Process of Participation Under Construction in the Light of the Strengthening of Reflection. Bogotá: Ministry of National Education of Colombia.

Valero A., María N. and Febres Cordero-Briceño, M. (2019) Environmental Education and Education for Sustainability: history, foundations and trends. In Encuentros magazine, Vol. 17-02. Autonomous University of the Caribbean. Doi: http://dx.doi.org/10.15665/encuent.v17i02.661

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