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Student Perceptions of Water in a Rural Environment: Unveiling Social Representation

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Abstract

The article identifies and characterizes social representations of water quality in a rural school in Bogotá. The grounded theory method was done from a qualitative approach and an interpretive hermeneutic paradigm. The analysis was developed from the associative letter, questionnaire, qualitative interview, field diary, drawings, and graphic supports. The data show that a central nucleus predominates where water quality converges as a globalizing aspect, demonstrating a synergy between the knowledge built and learned from school and families, which are diverse in their composition and origin; this rural sector has welcomed population migrants nationally and nationally. In the field of representation, the agreed naturalistic and anthropocentric typology is privileged, and a favorable attitude towards the conservation of water quality is evident through participation in actions that tend to conserve the water quality in the territory.

Keywords: *social representations, water quality, rurality.*

Introduction

At a global level in the last fifty years, the paradigm around climate change has been transforming; with the advancement of technology, it was thought that it could be mitigated; however, nowadays, the idea of adapting to it is established since it has been noted that not even technology can stop it. This is how a geopolitical, economic, social, and environmental interest has become visible around accessibility to water, placing it in the indispensable category. Because it ensures the survival of all organisms, they, in turn, are primarily responsible for the various ecosystem services they provide, including air purification, physical support for biodiversity, soil nutrition, water infiltration, nutrient cycles, regulation, control in hydrographic basins, cultural services and those adopted by communities (Andrade et al., 2011).

In turn, human organization models have significantly altered these ecosystem services, prioritizing the dominant paradigm of a better quality of life in cities with overexploitation of resources. Thus, Enrique Leff (2004, p.181) highlights that "ecological degradation is the mark of a crisis of civilization, of a modernity founded on economic and scientific rationality as supreme values of the civilizational project of humanity," denying all costs nature as a source of wealth, cultural and ancestral support, and unique means of ecological-cultural co- evolution.

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In our country and in general in Latin America, the centralization of opportunities, the armed conflict, the lack of planning and territorial ordering, and the lack of commitment and budget for the rural sector have multiplied the effects in peri-urban areas, increasing vulnerability, poverty, and accessibility to various goods and services, including health, well-being, drinkability, and basic sanitation, which present delays in the peripheries and rural areas of the country (Roldán et al., 2018).

In this same line, environmental education in educational institutions, from a perspective of complexity, has a holistic, participatory, critical, and purposeful character that leads to the transformation of people's realities, individually and collectively, and to a political, economic, social, technological, ethical and aesthetic resignification (Zamudio, 2015)—leaving behind the ecosystemic position and the poor relationship of organisms with biophysical factors, and giving way to the systemic analysis of environmental concepts, including water quality.

Based on this panorama, characterizing Social Representations (SR) allows us to recognize the notion created to explain what unites people in a group in a society. It makes them act as if "the construction of SR is strongly related to "the cultural practices that the subject carries out in his group." (Flores, 2019). These representations "…integrate both the social and the individual, as well as the information and attitude towards something or someone," giving sense and meaning together. Hence, the dimensions to work on in this research process are attitude, information, and field of representation regarding water quality in a rural context. This can generate tools to build contextualized environmental education strategies focused on and inclusive of the communities involved under the following problem question: What are the social representations about water quality that Cycle II students of the IED rural school El Curubital, Bogotá - Colombia have?

This research aims to characterize the social representations about water quality that cycle II students (primary students between 7 and 12 years old) have built in the rural context, specifically in the District Educational Institution (IED) rural school El Curubital, located in the village of the same name in the town of Usme in Bogotá. Rural schools and colleges are characterized by training focused on a new school, several grades in one room. In this case, 3rd, 4th, and 5th grade students are trained in the same room, possibly developing competencies and skills holistically, with solid work with families, transversal curriculum, and teacher training.

As part of the context of the students and families, it is relevant to mention that they are in a rural territory, the children's homes are kilometers from the educational institution, and not all the houses and farms have sewage, but they have a local aqueduct. The Curubital River surrounds them, and ravines and lagoons are in good condition. As in several departments of our country, displacement is evident, and recently, migration is also a protagonist, which is why displaced families from various areas of the country have arrived in the region as foreigners, in this case, from Venezuela. This area is part of the areas prioritized by the Territorial Approach Development Programs (PDET), allowing synergies to be managed for the region's environmental, social, and economic development (see Figure 1). In order to appreciate these representations, the research is framed in the interpretive hermeneutic epistemological position, qualitative approach, and the grounded theory method to highlight those social constructions around water quality in a rural context.

Figure 1. Location of El Curubital Rural School - IED.

Own creation - Google Maps.

Methodology

In order to obtain sufficient and relevant empirical information to characterize the SRs on water quality, it is necessary to apply different information collection techniques, emphasizing the processual and structural approach related to the theoretical reference framework, which allows us to recognize the content and organization of this content in the context, without leaving aside the central core that is socially determined, linked to historical, sociological and ideological conditions, and constitutes the social and collective basis of the representations (Banchs, 2000). Thus providing more significant elements that allow (Pedron, 2021) understanding of reality through the organization of the elements of social representation and the symbolic productions of the meanings given by students regarding water quality. To achieve this, a questionnaire, qualitative interview, field diary, associative letter, drawings, and graphic supports (see Figure 2) methodological design of the research were applied.

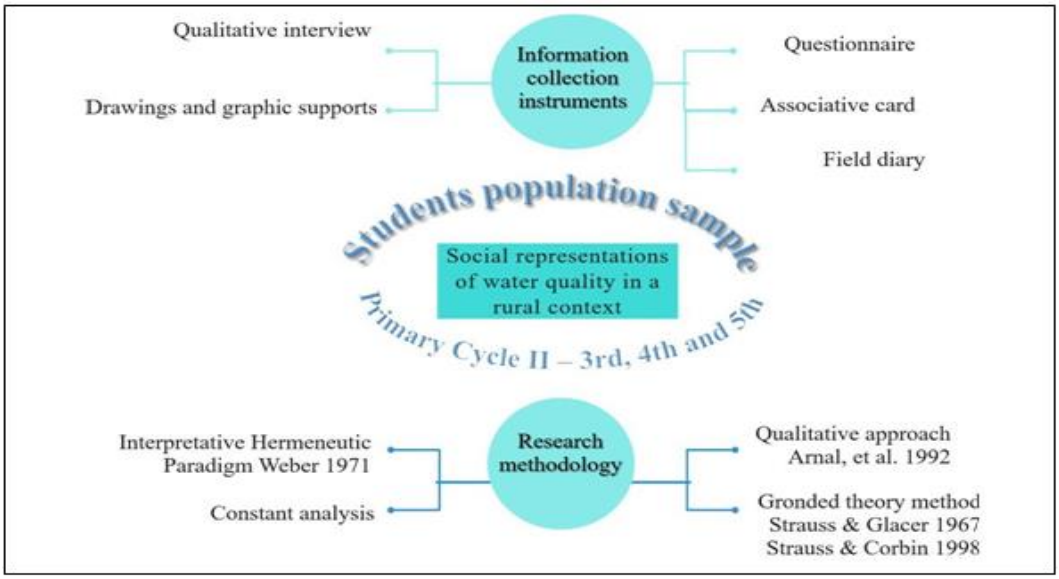


Figure 2. Methodological research design.

Own elaboration

These instruments were analyzed within the framework of the categories of the processual (Araya, 2002) and structural approaches (Abric, 2001) and the three information dimensions of SR, field of representation, and attitude (Moscovici, 1961) with the support of qualitative data analysis software.

Results and discussion

To identify the constituent elements of the SR and characterize them from the dimensions of information, attitude, and field of representation, instruments such as a questionnaire, field diary, associative letter, Likert scale, and qualitative survey with graphic supports.

Information dimension: As Moscovici (1961) states, information is recognized with how subjects organize knowledge about the object; in this case, they relate water quality with some characteristics associated with drinking or non-drinking water conditions. ; The associative letter allows you to identify words such as crystalline (4), clean (4), transparent (4), acidic (3), takes everything with the flow (3), takes any shape (3), colorless (2), cloudy (2) and helps life (1).

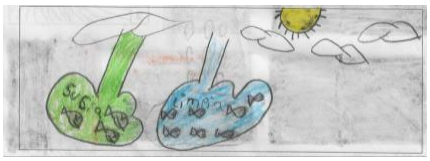
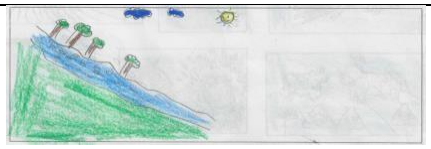
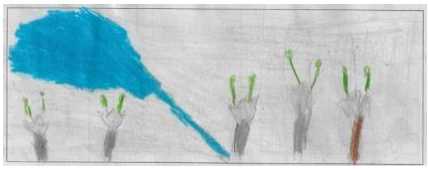
The above correlates with what Araya (2002) states, where the diversity of information can be distinguished, which is directly affected by the social context in which the actors selected for the present study find themselves and the social constructions of their territories—current and past. The case of "it takes everything" does not refer to the current context but to the experiences of children from other areas of the country who witnessed landslides due to heavy rains or mountainous areas while investigating. Thus, knowledge is heterogeneous; that is, it is not necessarily stable and agreed upon by constantly changing communities (Geertz, 1994).

Figure 3. Frequency of the words written by the students in the associative letter.

Own elaboration.

To continue expanding on the information dimension, Table 1 below shows the explanations and drawings that show what they understand by water quality.

Table 1. Graphic support where students explain what they understand by water quality.

Student	Drawing / Water Quality	Explanation
5th grade students		There are trees, frailejones, a river with fish and crabs.
		Draw the water clean and clear, and the other has dirty water and dead fish.
4th grade students		There is vegetation around, there are trees, there are people. In the river there are fish, trout, tadpoles, in the river there are crabs.
3rd-grade students		There is vegetation around the lagoon.
		The moor gives us its clean water and it is very rich, this water goes down to the city.
		There is vegetation around the lagoon, in the water there are some trout, fish, tadpoles and crabs.
		There are bushes around the river, inside there are fish, trout, crabs and small frogs.

Own elaboration.

The students' drawings and explanations highlight a similar environmental context, showing the presence of the same groups of animals and plants, allowing the water quality. This is how Jodelet (1984) affirms that the information in SR is linked to how social subjects apprehend the events of daily life, the characteristics of our environment, and the information that circulates in it, thus allowing social practices to be correlated. : dialogue, discourse, rituals, labor and production standards, art, in short, culture, which facilitates the understanding and visualization of the knowledge and identity built by a community around the quality of water, rural life, the countryside, agriculture, and livestock with a sense and meaning that gives them identity. Hence, culture establishes a significant relationship with social representations generated and shared in social interactions (Ortega, 2003).

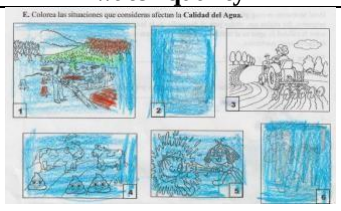
For their part, the students' drawings and explanations illustrate a correlation between the biodiversity surrounding the water resource and its relationship with its quality, expanding the generalized idea that the quality of water is associated with the drinkability of the resource, taking as referring to the concept that stands out (Roldán et al., 2018) based on the Water Framework Directive of the European Community (EU, 2007), which defines it as those conditions that must occur in water for it to maintain a balanced ecosystem and meets specific ecological quality objectives, which go beyond evaluating the requirements for specific use (IDEAM, 2015). This has been disturbed by changes in land use, urban expansion, and lack of guidelines and environmental legislation that encourage the conservation and preservation of diverse ecosystems, which provide better quality precious liquid.

In this way, it is visible that the training of the natural sciences of this rural educational institution has focused on a concept from the complexity of the concept of water quality, and not only a utilitarian approach, where quality is associated with the environmental conditions of the factors that surround it and make its drinkability possible for cities and rurality itself through irrigation of crops and animal husbandry.

Likewise, the drawings evoke a teaching and learning process based on the comparison and use of analogies in the classroom - drawings with and without contamination - implemented as a vital tool to publicize water quality characteristics. The teaching and learning process acquires a transversal connotation because the school is a center of thought, meeting, and reference for training boys, girls, adolescents, and families, where teachers acquire a leading role and empower the transformation and mimesis of their knowledge.

As Fonseca Martínez (2018) points out, the use of analogies is part of the moment of transformation of the teacher's disciplinary knowledge; Vásquez (2019) also points out that these allow comparing a fact that is known by students according to a criterion established by the teacher with another fact that is not easy to understand without giving characteristics of either of them. In the interviews, it was observed that students and teachers use analogies to represent and clarify their perception, sense, and meaning of water quality.

Table 2. Relationship with the situations that students color that affect water quality.

Possible situations that affect water quality	**Analysis**
	Most of the students (7/8) colored the situations 1 cutting down trees, 2 using agrochemicals, 4 livestock farming, 5 playing with water and 6 wasting water resources. They do not consider the agriculture represented in section 3 as a situation that affects water quality.
	A student needs to consider that playing and wasting water affects the quality of the water. For its part, if I color the numeral three livestock.

Now, most students do not consider agriculture (drawing 3 - plowing the land) as an action that affects water quality. This indicates that there is a representation, a social construction around the statements “food is grown for the people of the city,” “it allows us to live off the

land," and "so that there is food." Also, in the area, water quality studies have been carried out that have shown water resource contamination due to agrochemicals; these have been socialized at school to the educational community, made up of students, families, and teachers. It is important to note that the students colored the waste of water since, in rural areas, the resource is abundant, and sometimes it tends to be wasted. It is considered that the felling of trees and cow feces affects water quality, which according to What was discussed with the boys and girls, is considered a source of high pollution "The cow's poop releases hazardous gases" "when it rains those gases reach the river and the lagoon" "the poop has flown, and sometimes that mushrooms grow out."

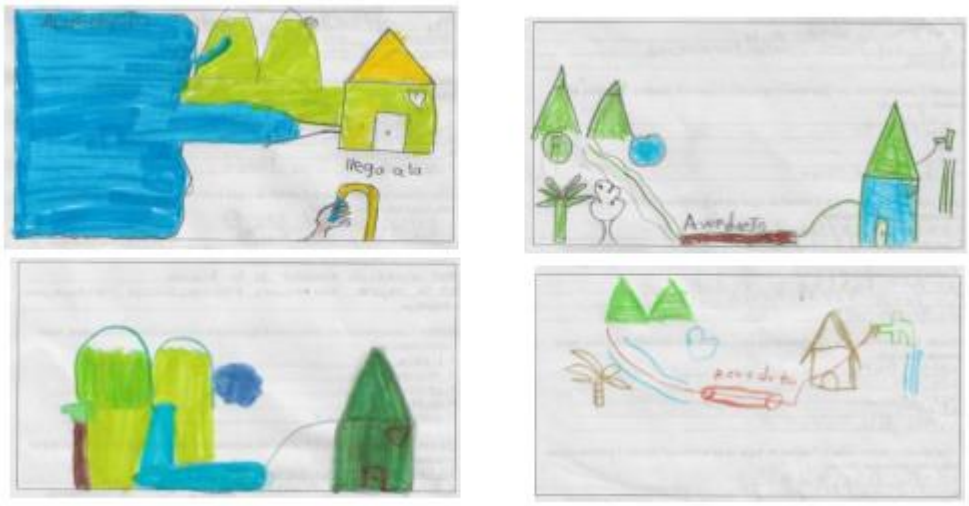


Figure 4. Graphic representation of how water gets to your house, farm, and school.

Own elaboration.

The area where the research was carried out is surrounded by two dams that allow water to be stored and retained for hydroelectric, consumption, and irrigation purposes. However, the students' drawings show that the water that reaches their homes comes from the mountains and the moor (several students drew frailejones), not exactly from the dams; although they have a local aqueduct, they do not have sewage, most of them The houses have a septic tank, although in recent years they have received some aid for home improvement, the requirements often do not allow all households to take advantage of these state benefits.

Dimension of the field of representation: To analyze this dimension, it is necessary to know the typologies of the social representations of the environment and thematic axes, adapted from Sauvé (2004), Flores (2008), Reigota (1990) and Andrade (2004) and Campos and Durán (2020).

Table 3. Typologies of environmental SRs and thematic axes. Adaptation from Sauvé (2004), Flores (2008), Reigota (1990), Andrade (2004), and Campos and Durán (2020).

Social Representation of environment	**Axles/Anchor**
Globalizing	Balance, organizations, sets, structure, globe, diversity, interactions, causes, consequences, universe, sets of elements, relationships.
Naturalist	Energy, evolution, mother nature, Geography, type of life, living planet, life support, bases of life, extinction of species, living world.
Anthropocentric Pact	Technological advances, exploitation of the world, today's life, progress, death and destruction.
cultural anthropocentric	Social factors, customs, society and education, knowledge.

anthropocentric utilitarian	Human life, healthy man, rural life, protagonists, civilization, human needs, human environment.

Own elaboration.

Another relevant aspect of the research is seen in Figure 5, which shows the SR of cycle II students in the rural context, where 50% (4) lean toward the Naturalist typology, which has a close relationship with geography, type of life, in this case rurality, peasant culture, the relationship with life and an environment that evokes meaning and meaning with the interaction with other living beings, their care and relationship with water sources, the latter seen as a generator of life on earth. This perception demonstrates the conservation of the environment and separates human beings from the ecosystems, highlighting the lack of intervention and the preservation of biodiversity; in the same way, historical and social processes or the development model are not contemplated (Flores, 2008) on the part of the students.

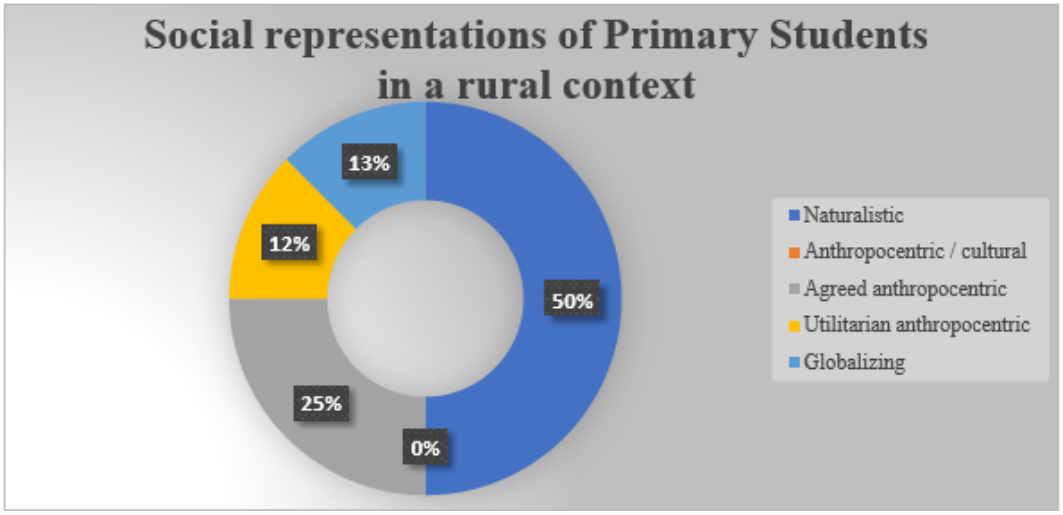


Figure 5. Social representations of cycle II students in the rural context.

Own elaboration.

Here, we can observe that 25% (2) represents the Pacted Anthropocentric typology; for their part, Andrade, De Souza, and Brochier (2004) ensure that the human being is present and the damages that occur in nature are justified to the extent that there is some benefit for man. The students become familiar with this pact with the modernization of the countryside, the exploitation of the land, the progress seen from the expansion of SITP (public transportation) routes, and greater commerce because tourism expanded in the area, and many people in the region They have begun to transform their farms into country restaurants, the area is privileged with the basins of the Tunjuelo and Curubital Rivers and lagoons that allow the breeding and marketing of trout and sport fishing for people who visit the area on weekends.

For the Globalizing (1) and Anthropocentric Utilitarian (1) typologies, in the first, the student refers to his perception of the diversity and relationship of the elements at his disposal and how he is part of that environment. For his part, the student who selects anthropocentric utilitarianism refers to the tranquility that rural life offers him because he comes from the peripheral neighborhoods of the capital. Given this structure, Escobar (2014) maintains that the decline of rural agriculture only occurred uniformly. Instead, stagnation is observed in peasant crop production, while capitalist farmers experience significant crop growth under modern conditions. Furthermore, this period of agricultural change led to significant social and cultural transformations, along with a generalized impoverishment of peasants, who were motivated to leave the territory in search of a fixed income in the city.

These aspects, such as stagnation in peasant production, the decline in the quality of life of peasants, and the associated social and cultural changes, laid the foundations for the health, nutrition, and rural development strategies implemented in the 1970s and 1970s. Eighty. These strategies persist, characterized by the importation of industrially developed or processed products from cities, which modify consumption habits and the environment, as well as the homogenization of crops, which eventually affects the quality of water and the environment. . rural diversity, conservation, and preservation of the territory and especially of the moors.

Attitude dimension

This dimension allows for a correlation between the links and affective/cognitive values students attribute to water quality in three options: agree, undecided, or disagree.

Table 3. Likert scale applied to cycle II students in the rural context.

Escala Likert			
1. I do not want to do anything to reduce the effects on the quality of the water in my environment.			**8**
2. Recover water quality and I am willing to help.	**7**		**1**
3. I am not willing to take care of the quality of the water.		**1**	**7**
4. I would like an active role in solving problems associated with water quality.		**6**	**3**
5. It is not necessary to take care of the Curubital River and its streams, because there is no life in them.			**8**
6. I would like to inform my neighbors and schoolmates about the importance of the Curubital River and the streams.	**5**	**2**	**1**
7. The Curubital River is not important because it is associated with the problems that affect the water quality in my environment.		**2**	**6**
8. The community can learn to take care of the Curubital River and its streams.	**5**	**1**	**2**
9. The Curubital River has no function in nature.		**1**	**7**

Own elaboration.

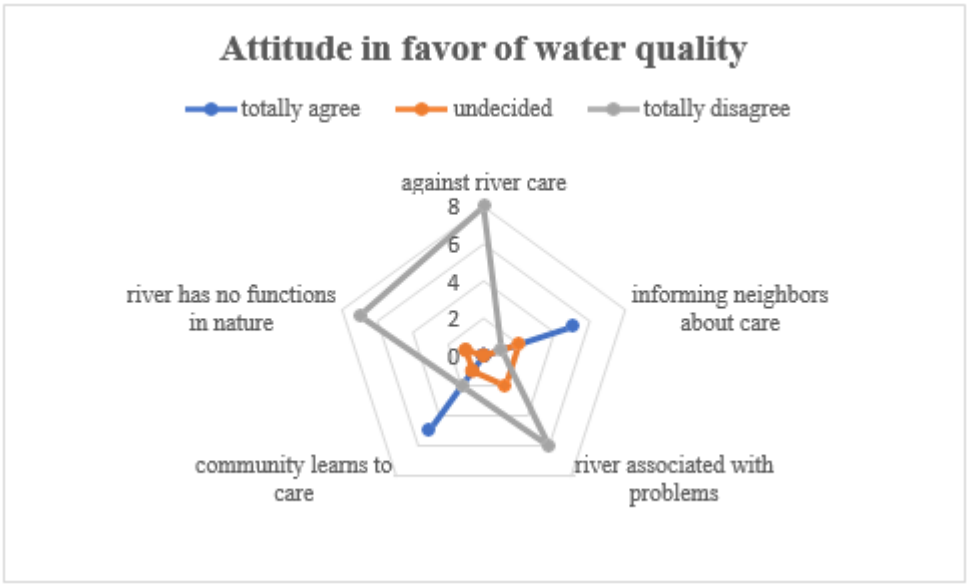


Figure 6. Actitud en pro de la calidad del agua de los estudiantes de ciclo II en el contexto rural.

Own elaboration.

Figures 6 and 7 highlight a favorable perception of water quality and support for its conservation - preservation of the conditions that make it possible in the rural context.

Where Meira's words (2002) make sense about social representations, an essential topic for environmental education, they are the raw material with which practices and objectives of change are sustained and supported. Students from rural contexts and mostly descendants of peasant families have the conviction of being actors of change in favor of water quality, seen from the complexity, not only as a resource but as an agent of life and life, which promotes the reunion of their families, provides food and allows the survival of other species, including the human species.

The peasant communities and inhabitants of the border areas of the Latin American capital, where some of the families of the students of this educational institution come from, differ from the European populations; as Moser (2005) concludes, developed countries have a vision aesthetic and identity and an attachment to water as heritage, while Third World countries are characterized by manifesting an essentially functional and ethical vision, because culturally they have particular ways of perceiving and relating to their environment, such as those seen in this research.

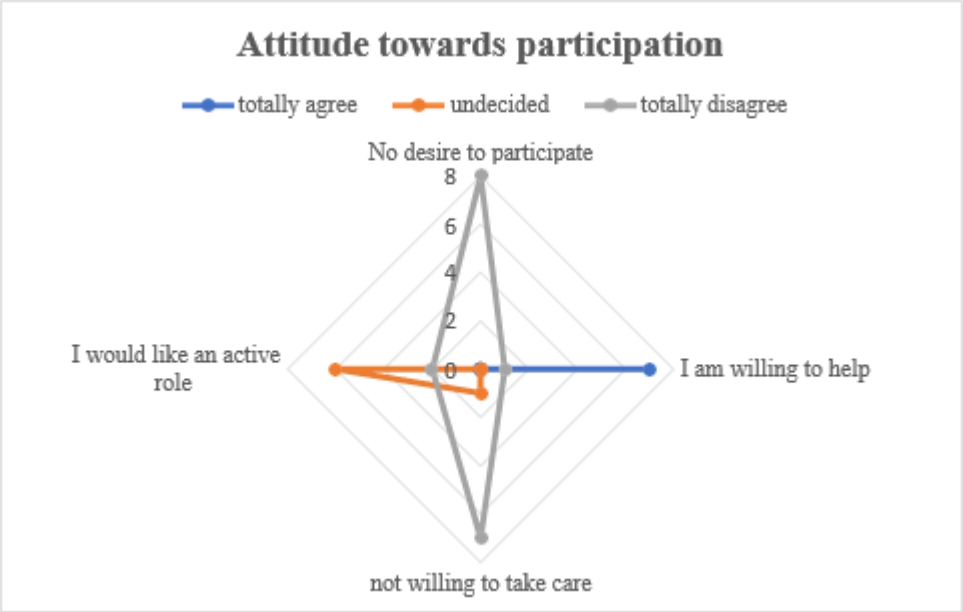


Figure 7. Participation attitude of cycle II students in the rural context.

Own elaboration.

Finally, the three dimensions analyzed above, information, field of representation, and attitude (see Figure 8), lead from the structural and processual approach to a central core that connects water quality to a global aspect, where students, families, and teachers come articulated. For its part, there is a favorable attitude in favor of water quality; in the field of representation, they leaned towards representations of a naturalistic and agreed anthropocentric type, evidencing that the rural context of the Vereda El Curubital has a high level of conservation and preservation around hydrographic basins and natural water sources, such as lagoons, despite the development imposed by tourism, commercialization, dams and changes in the consumption habits of its inhabitants.

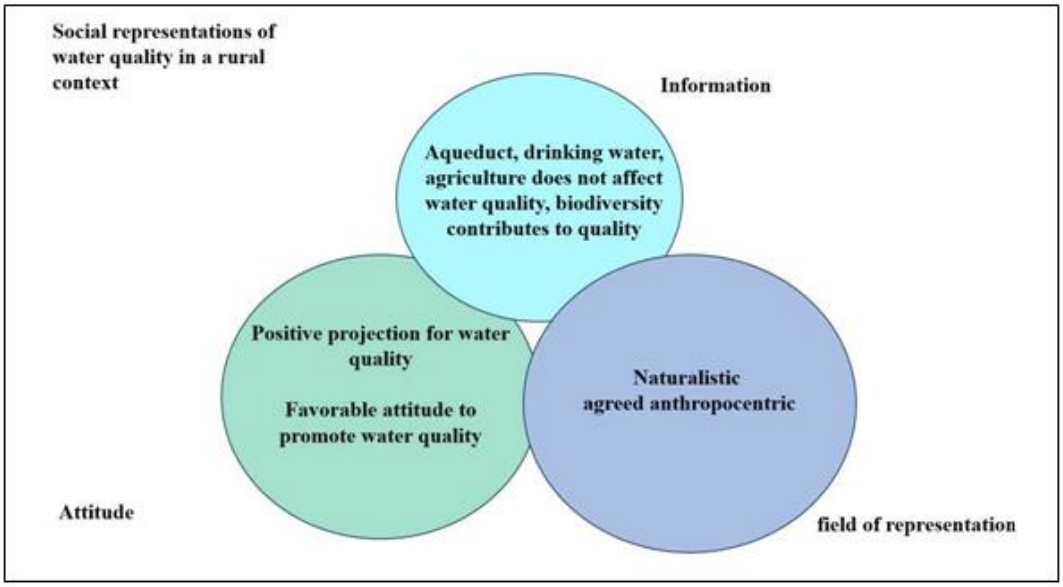


Figure 8. Ven diagram of the SR of cycle II students in the rural context.

Own elaboration

Conclusions

This research allowed us to identify the social representations and characterize them according to the theory, that is, the three dimensions and the structural and processual approaches, resulting in a central core that converges water quality as a globalizing aspect, where students, families, and teachers see themselves articulated, that is, the statements and relationships demonstrate a synergy between the knowledge constructed and learned by the school and the families.

In the field of representation, they leaned towards naturalistic and pacata anthropocentric representations, showing that the rural context of Vereda El Curubital has a high level of conservation and preservation around the hydrographic basins and natural water sources, such as the lagoons. For its part, a favorable attitude is presented in favor of water quality, seen from the participation and attitude that will tend to maintain the conditions that allow water quality from preserving biodiversity, the rural context, mountains, paramount vegetation, rivers, and lagoons.

The importance of continuing to work for the territories from their niche is evident, that is, taking into account their social constructions, favoring rural development processes by the needs, expectations, and interests of the inhabitants, not only the intermittent interests of the cities and agents that promote progress from excessive consumption and a utilitarian anthropocentric typology.

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