

**CONTEXTUALIZED EDUCATION IN THE SEMI-ARID REGION,
KNOWLEDGE OF THE LAND, AND GEOGRAPHY TEACHING****EDUCAÇÃO CONTEXTUALIZADA NO SEMIÁRIDO, SABERES DA TERRA
E ENSINO DE GEOGRAFIA****EDUCACIÓN CONTEXTUALIZADA EN LA REGIÓN SEMIÁRIDA,
CONOCIMIENTO DEL TERRITORIO Y ENSEÑANZA DE LA GEOGRAFÍA**Francisco Elitom Rodrigues da Silva¹José Falcão Sobrinho²Aldiva Sales Diniz³Cleire Lima da Costa Falcão⁴José Mauro Palhares⁵Antonia Vanessa Silva Freire Moraes Ximenes⁶**Artigo recebido: 15/11/2025****Artigo aceito: 31/12//2025****Abstract**

In the current globalized world scenario, in which information circulates increasingly fast, the article discusses the importance of contextualized education in the Semi-Arid region, valuing students' prior knowledge about the territory in which they live. Ethnoknowledge is highlighted as a fundamental element for understanding ways of living with the Semi-Arid environment. The study identifies whether students come from urban or rural areas, revealing differences and similarities in their everyday experiences. It is emphasized that both urban and rural students construct knowledge based on their experiences with climate, vegetation, and natural resources. Geography teaching is analyzed as a mediator between scientific knowledge and local knowledge. The article points out that the Semi-Arid region is often addressed in a stereotypical manner in school curricula. Therefore, an approach that considers students' concrete reality is advocated. Contextualization strengthens identity and the sense of belonging, valuing coexistence with the Semi-Arid region rather than combating it. Thus, Geography contributes to the construction of a critical and meaningful education.

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Keywords: Contextualized education; Semi-Arid region; Ethnoknowledge; Geography teaching; Knowledge of the land.

Resumo

No atual cenário do mundo globalizado, em que as informações fluem de forma muito rápida O artigo discute a importância da educação contextualizada no Semiárido, valorizando os saberes prévios dos alunos sobre o território em que vivem. Destaca o etnoconhecimento como elemento central para compreender as formas de convivência com o Semiárido. O estudo identifica se os alunos pertencem ao espaço urbano ou rural, evidenciando diferenças e semelhanças em suas experiências cotidianas. Ressalta-se que tanto alunos urbanos quanto rurais constroem conhecimentos a partir da vivência com o clima, a vegetação e os recursos naturais. O ensino de Geografia é analisado como mediador entre o conhecimento científico e os saberes locais. O artigo aponta que, muitas vezes, o Semiárido é tratado de forma estereotipada nos conteúdos escolares. Defende-se uma abordagem que considere a realidade concreta dos alunos. A contextualização fortalece a identidade e o sentimento de pertencimento. O ensino passa a valorizar a convivência, e não o combate ao Semiárido. Assim, a Geografia contribui para uma educação crítica e significativa.

Palavras-Chave: Educação contextualizada; Semiárido; Etnoconhecimento; Ensino de Geografia; Saberes da terra.

Resumen

En el escenario actual del mundo globalizado, donde la información fluye con gran rapidez, este artículo analiza la importancia de la educación contextualizada en la región Semiárida, valorando el conocimiento previo del alumnado sobre el territorio en el que vive. Se destaca el etnoconocimiento como un elemento central para comprender las formas de vida en la región Semiárida. El estudio identifica si el alumnado pertenece a zonas urbanas o rurales, destacando las diferencias y similitudes en sus experiencias cotidianas. Se enfatiza que tanto el alumnado urbano como el rural construyen conocimiento a partir de su experiencia con el clima, la vegetación y los recursos naturales. La enseñanza de la geografía es específica como mediadora entre el conocimiento científico y el conocimiento local. El artículo señala que, a menudo, la región Semiárida se trata de forma estereotipada en los currículos escolares. Se aboga por un enfoque que considere la realidad concreta del alumnado. La contextualización fortalece la identidad y el sentimiento de pertenencia. La enseñanza comienza a valorar la convivencia, no la lucha contra la región Semiárida. De esta forma, la geografía contribuye a una educación crítica y significativa.

Palabras clave: Educación contextualizada; Región Semiárida; Etnoconocimiento; Enseñanza de la geografía; Conocimiento de la tierra.

INTRODUCTION

The Brazilian semi-arid environment is often addressed mainly through its natural aspects, with climate being the predominant focus of discussion (De Jesus, 2021). However, its interpretation has expanded to encompass cultural and economic dimensions, as highlighted by Falcão Sobrinho and Oliveira (2025). In the state of Ceará, this domain covers

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approximately 92% of the territory, constituting the predominant physical-natural base. In this context, Reriutaba—the municipality that comprises the study area of this research—has 100% of its territory inserted within this natural domain. It is a space marked not only by rigorous environmental constraints, but also by the historical construction of local knowledge related to land use, developed by sertanejo populations as a form of adaptation to the limitations imposed by climate and shallow soils.

From an economic perspective, Araújo (2021) point out that, from the 1980s onward, the Brazilian Northeast gained greater relevance in the national scenario due to the decentralization of productive activities and the expansion of investments. However, this process occurred unevenly, failing to fully reach the dry Northeast, which continues to face structural constraints associated with climatic irregularity. In this context, land use remains strongly conditioned by rainfall cycles and is guided by traditional practices such as crop diversification, the use of naturally more fertile areas, and the careful management of the caatinga, revealing the central role of ethnoknowledge in local productive organization.

From a hydrological standpoint, the Brazilian semi-arid region is characterized by low surface runoff volumes and limited groundwater storage capacity (Moura et al., 2007). This condition results from the high temporal variability of rainfall, ranging between 300 mm and 800 mm annually combined with the predominance of shallow soils over crystalline basement rocks, which present low infiltration rates and weak interaction between watercourses and adjacent soils. As a result, a dense network of intermittent rivers is formed, with the exception of a few perennial rivers such as the São Francisco and Parnaíba. In response to these natural limitations, local populations have developed traditional strategies for water capture and storage, such as the construction of reservoirs, ponds, and shallow wells, integrating empirical landscape knowledge into land-use practices.

Regarding agricultural practices, Falcão Sobrinho (2006) observes that the clearing of areas intended for planting generally occurs in December and January, often through deforestation and vegetation burning. When considered alongside the morphoclimatic characteristics of the semi-arid region, such practices contribute to the intensification of erosive processes, especially during the rainy season, when unprotected soil is directly impacted by precipitation. Nevertheless, alongside these practices, traditional forms of management persist, such as intercropping, the use of dead vegetal cover, and respect for

fallow periods, expressing sertanejo ethnoknowledge aimed at conserving soil fertility and mitigating environmental degradation.

Historically subjected to adverse climatic conditions, the sertanejo has developed a set of knowledge and techniques for living with the semi-arid environment that express resilience. These forms of knowledge are manifested in everyday interactions with the land, in agricultural calendars based on observation of natural signs, in the selection of native species more resistant to drought, and in the maintenance of productive home gardens. This knowledge is deeply rooted in experience, articulating productive, cultural, and symbolic dimensions that shape the relationship between society and nature in the rural environment.

In the semi-arid region, climate constitutes a central element for understanding socioeconomic and environmental dynamics, determining both erosive processes and landscape formation, which is marked by the predominance of physical weathering. In response to recurring droughts, the Government of the State of Ceará has historically implemented emergency and structural actions, such as the construction of water pipelines, installation of household cisterns, public fountains, desalination systems, and well drilling (Reriutaba, 2019). Even so, traditional knowledge related to land and water use remains essential, functioning as a complement to public policies and as a foundation for local climate adaptation strategies.

In the current context of Reriutaba's semi-arid region, despite affirmative policies aimed at improving the living conditions of rural populations, the intensification of droughts and the reduction of productive opportunities have made rural life less attractive to young people. This process has intensified migratory flows among younger generations. Nevertheless, traditional knowledge associated with land use continues to play a relevant role in maintaining cultural identity and socio-environmental resilience in rural communities.

The municipality of Reriutaba is located in the northwestern portion of Ceará, bordering the municipalities of Ipu, Graça, Cariré, Varjota, Pires Ferreira, Guaraciaba do Norte, and Pacujá, covering an area of 345 km². Its territorial division comprises three districts—Sede, Campo Lindo, and Amanaiara, with a significant presence of rural communities. In these localities, land use is strongly associated with the empirical knowledge accumulated by farming families, guiding decisions ranging from the selection of planting areas to the preservation of strategically important natural environments.

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According to IBGE data (2025), the municipality had 18,606 inhabitants in 2022, with an estimated population of 19,059 in 2024, and a demographic density of 49.89 inhabitants/km². Situated at an altitude of 167 meters, the territory exhibits a pattern of occupation that integrates urban and rural spaces, where ethnoknowledge continues to guide practices related to soil, water, and vegetation management.

Reriutaba is entirely located within the Acaraú River Basin, which has a drainage area of 14,423 km² and encompasses 28 municipalities (Ceará, 2018). The Acaraú River and its tributaries constitute the main water resources of the region and have historically been used by local communities through traditional practices of riverbank protection, riparian forest conservation, and the construction of small community dams.

The municipality's climate presents thermal variations between 19 °C and 29 °C, with annual rainfall between 1,000 mm and 1,200 mm, constituting a climatic pattern considered atypical for the standards of the Brazilian Northeast (Reriutaba, 2019). This climatic diversity favors the coexistence of different productive strategies, supported by local knowledge of planting, harvesting, and land management periods.

From a hydrogeological perspective, crystalline rocks, sediments of the Serra Grande Formation, and alluvial deposits stand out in Reriutaba. In fissured aquifer areas, groundwater availability depends on fractures and fissures in the rock, whose recognition is traditionally known by local residents, guiding well drilling and territorial occupation.

The municipality's vegetation diversity reflects its climatic heterogeneity, with the occurrence of arboreal caatinga, open shrubby caatinga, dry forest, and humid forest. Ethnoknowledge associated with these vegetation formations involves the sustainable use of timber, medicinal, and food resources, as well as practices aimed at conserving local biodiversity.

Given this context, the research sought to understand the sociospatial dynamics of Reriutaba's semi-arid region based on the relationship between school education, Geography teaching, contextualized education, access to ICTs, the world of work, and rural youth's perceptions of nature and peasant life. The empirical analysis was grounded in spatial recognition of the study area and the collection of primary data through semi-structured questionnaires, adopting a systemic, holistic, and integrated perspective, with special attention to the role of ethnoknowledge in land use.

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EPISTEMOLOGICAL FOUNDATION OF THE STUDY

According to Falcão Sobrinho (2025a), the expression Contextualized Education refers to a pedagogical approach that seeks to relate educational contents and practices to the sociocultural, economic, historical, and environmental context of learners from a local perspective, valuing the territory. From this standpoint, the author argues that Contextualized Education also aims to value students' knowledge, experiences, and the specificities of the community in which they are embedded, making the teaching–learning process more meaningful and connecting it to the subjects' lived reality.

In this sense, according to Chaves and Costa Falcão (2025), the teaching of Geography goes beyond explaining geographic space; it promotes reflections on the organization of society and the possibilities for transforming reality through spatial concepts. Thus, when applied from the perspective of contextualized education, geography offers important pedagogical support, changing students' perceptions of geographic space and of their own role within it.

From the perspective of Falcão Sobrinho (2025), the integration between natural components and pedagogical practices enriches the teaching of geography, promotes meaningful learning, and raises students' awareness of the importance of contextualized education for coexistence with the semi-arid region.

However, prevailing educational models generally prioritize quantitative aspects to the detriment of qualitative ones. In this way, according to Silva et al. (2018), there is, in fact, the introduction of an urban-centered educational model in rural areas, which disregards the local socioeconomic and environmental context.

For Silva et al. (op. cit.) and Falcão Sobrinho (op. cit.), there is yet another aggravating factor, since, supported by educational models organized and mediated by educators who, in turn, do not undergo training aimed at dealing with the specificities of such realities, a model of banking education becomes consolidated—one that is increasingly distant from the subjects' lived realities and that instills in the educational process the conception of the countryside and of the Brazilian semi-arid region as uninhabitable.

[...] a partir dessa realidade de educação urbanizada inserida no campo, o contexto local passa a ser desconsiderado dentro das escolas, institucionalizando-se por intermédio de pacotes prontos (professores da cidade, livros didáticos urbanizados, currículos verticalizados), em que as peculiaridades dos contextos e da identidade dos sujeitos dos territórios camponeses são negadas. Respaldo nos modelos educacionais urbanizados e mediados por educadores que, por sua vez, não passam por formações voltadas para lidar com as especificidades de tais realidades, vai-se consolidando um modelo de educação bancária, cada vez mais distante dos sujeitos, imbuindo no processo educativo a concepção de um campo e de um Semiárido Brasileiro sem condições de viver (SILVA et. al. 2018)⁷.

According to Santos and Araújo (2020), the teaching of Geography, when carried out in a contextualized manner, influences students' perceptions of their habitual *locus*, encouraging critical thinking about their factual reality and fostering an understanding of their role as agents in transformative processes of the environment—individuals capable of creating and recreating the territory they occupy.

In this sense, Da Silva and Da Silva (2024) emphasized that the region should be conceived as the guiding and interdisciplinary axis in contextualized school education, taking into account the natural, economic, and social aspects of places. This perspective aims at the construction of knowledge grounded in the subjects' factual reality, highlighting diverse forms of knowledge, as well as the potentials and vulnerabilities of the spaces they occupy. The experiences and protagonism of subjects in the construction and reconstruction of places are thus considered the starting point for understanding factual reality.

Contextualized Education for Coexistence with the Semi-Arid Region makes it possible to broaden attentive perspectives on this environment, to understand its potentials and challenges, and to link scientific knowledge with the subjects' own knowledge of their habitual *locus*. In this way, individuals are enabled to intervene directly in their communities through the exchange of knowledge and the appreciation of the territory, as well as through the identification of needs to be discussed within the school environment.

Associated with contextualized education is ethnoknowledge. According to Falcão Sobrinho (2026), this perspective is especially powerful for geographic education in the semi-

⁷ Translation: [...] based on this reality of urbanized education inserted into the countryside, the local context begins to be disregarded within schools, being institutionalized through ready-made packages (teachers from the city, urbanized textbooks, vertically structured curricula), in which the peculiarities of the contexts and the identities of the inhabitants of rural territories are denied. Supported by urbanized educational models and mediated by educators who, in turn, have not undergone training aimed at dealing with the specificities of such realities, a banking model of education is gradually consolidated, increasingly distant from the subjects, instilling in the educational process the conception of a countryside and a Brazilian Semi-Arid region incapable of sustaining life (SILVA et al., 2018).

arid region, where populations develop unique forms of knowledge based on their historical coexistence with the environment.

It is noteworthy that some municipalities in the state of Ceará, such as Iraporanga, Ipueiras, Novo Oriente, and Ararendá, have municipal laws that have made Contextualized Education a policy for local sociocultural appreciation since 2015, 2021, 2019, and 2020, respectively. However, only in 2022 was State Law No. 18,164/2022 approved, which establishes the guidelines for the State Policy of Contextualized Education for Coexistence with the Semi-Arid Region. In this regard, the Ceará State Department of Education (SEDUC-CE) includes, within its organizational structure, the Coordination for Indigenous, Quilombola, and Rural School Education (Cociq), which encompasses the State Policy of Contextualized Education (CEARÁ, 2025).

COEXISTENCE WITH THE SEMI-ARID REGION AND THE PRODUCTION OF SPACE

It is noteworthy that the semi-arid backlands surface of Brazil's Northeast (NEB) has historically been an area of labor dispersion to various parts of the Brazilian territory, especially to the country's Center-South region in the mid-twentieth century. According to the IBGE (2011), these migration flows have currently decreased. In this regard, Escócio and Dutra (2008) questioned what would lead the *sertanejo* to remain in the semi-arid region if droughts continued to occur. Such a question raises the need for deeper reflection on the subject in order to better understand the *sertanejo*'s habitat.

According to the aforementioned authors (op. cit.), there is an existential bond that links the *sertanejo* to the land, related to being familiar with, belonging to, and dwelling alongside it. It is also possible, according to them, to understand this existential dimension as a human possibility of "feeling at home," welcomed and belonging to a place amid everyday dispersion, intrinsically associated with the existential of disposition/mood.

Historically, the climatic adversities of the semi-arid region have highlighted the *sertanejo*'s capacity for resilience and have transformed the local landscape through the incorporation of other elements associated with coexistence with the semi-arid environment. For Falcão Sobrinho (2025), such factors materialize through social technologies, which are products, techniques, or methodologies with the potential for replication, created and/or

applied in interaction with *sertanejo* communities and which represent solutions for social change through the sustainable use of locally available natural resources.

On this matter, in Sousa's (2005) understanding, in general, when the scarcity of natural resources is combined with the use of rudimentary techniques to exploit water resources in semi-arid regions (Carvalho et al., 2021), there is a tendency toward the intensification of environmental imbalances. This environmental disturbance is empirically evident in the landscape and in people's lives (e.g., cyclical droughts, torrential rains, soil impoverishment, hunger, and the death of people and livestock).

However, in the conception of Escócio and Dutra (2008), the *sertanejo* of the semi-arid region is rooted in a universe of meanings shaped by historical exploitation, scarcity, and religiosity, since, according to them, within the human being dwells a pre-understanding of oneself and of the world that moves them. Thus, in the movement of unveiling and concealing meanings and senses, within a historical horizon imbued with power relations and cultural and religious multiplicity, the semi-arid environment blossoms as a possibility for human dwelling based on each subject's experience of place.

In this scenario, according to Escócio and Dutra (op. cit.) and the IBGE (2025), despite the intense migratory movement of *sertanejos* from Brazil's Northeast to the country's Southeast region in the recent past, this flow has decreased in recent decades. Nevertheless, the rural population continues to decline, despite the implementation of technologies and public policies aimed at mitigating the socioeconomic and environmental challenges faced by local inhabitants in their coexistence with the semi-arid region.

With regard to education, contextualized education proves to be timely when working with local realities, whether those of students or of their families, as observed in Ferreira and Teles (2024), Ferreira et al. (2025), and Falcão Sobrinho (2025b), Marques et al (2024) & Carmo et al (2024).

THEORETICAL–METHODOLOGICAL DESIGN AND TECHNICAL–OPERATIONAL FRAMEWORK OF THE STUDY

The theoretical–methodological framework of this research is epistemologically grounded in geosystemic and holistic theory, conceiving the object from an integrated perspective based on the viewpoints of the study’s subjects. Its theoretical foundation is anchored mainly in systems theory. According to Bertalanffy (1950), the analytical rationality of earlier times divided science into specific and disconnected parts of knowledge, thereby decharacterizing scientific knowledge, insofar as one area of science became entirely detached from another, with each formulating knowledge inherent to a particular scientific field, alienated from the whole.

This methodology was further developed through Edgar Morin’s theory of complexity (2002, 2003), which posits that society is inseparable from civilization. In this way, subjects interact directly with the environment and with one another, affecting and being affected by the set of elements existing therein, thus shaping their view of it.

From this perspective, qualitative study within a holistic approach emphasizes the meaning, sense, and purpose of the object studied, guiding it methodologically through a synthetic vision and valuing the qualitative and experiential aspects of the analyzed facts, the concreteness of the examined factual reality, the intersubjectivity of the interlocutors, and socio-environmental values, in opposition to the logicist exactitude of the analytical method (CARNEIRO et al., 1996; PINHO, 2019a).

The study of the landscape on the semi-arid backlands surface as a synthetic expression of transformed nature presupposes a detailed analysis of various factors—geoenvironmental as well as political-economic and social, resulting from the dialectical interaction between subjects and nature, as set forth in studies on the semi-arid region by Falcão Sobrinho (2025b).

Methodological Procedure and Technical–Operational Aspects

The methodological pathway proposed for this research primarily met the requirements of a scientific analysis of a qualitative and exploratory nature. The process of apprehending primary data occurred through dedication to addressing the empirical and factual dimensions of the investigated object, based on the perceptions of local subjects, encompassing both the objective and intersubjective aspects of the facts. The collected data were analyzed in detail, consistently proceeding through empirical and factual analysis of the object under study, as highlighted by Demo (2000).

According to Silva and Faustino (2024), the qualitative method occupies a fundamental place in scientific research, as it provides a more accurate and contextualized understanding of social, cultural, and behavioral phenomena of subjects. Unlike quantitative methods, which focus on measurement and statistical analysis of data, qualitative methods prioritize the exploration of subjects' experiences, meanings, and interpretations within their natural contexts.

The empirical component of this case study consisted of activities carried out *in loco*, with the delimitation of the study area through mapping based on satellite information, geographic location via GPS, and other location tools such as Google Earth and Google Maps, aerial photographs, and periodic visits to the public high school EEMTI Coronel Alfredo Silvano, located in the municipal seat of Reriutaba, Ceará, which was adopted as the local focus of the study.

The selection of the field team (30 high school students) was carried out randomly among students from the aforementioned public school. Their training took place through a scientific research methodology workshop lasting 4 class hours, as well as through participation in a lecture delivered by the author of the present study at the school itself in April 2025. The lecture addressed the semi-arid region, its challenges, and its potentialities.

The technical–operational procedures of the research involved the application of questionnaires using the “survey by questionnaire” technique. The research instrument consisted of 18 open- and closed-ended multiple-choice questions, designed according to the Likert scale (1932), which focuses on data analysis through a composite index derived from the sum of a series of questions representing the interlocutors' attitudinal scale (ANTONIALLI et al., 2017).

During fieldwork, the teams were guided remotely via WhatsApp group messages by the author of the study and *in loco* by a collaborating teacher from EEMTI Coronel Alfredo Silvano. The teacher was responsible for gathering team members, conveying the study guidelines, mediating between the involved subjects and the school, and coordinating internal and external activities related to the school environment through WhatsApp messaging.

Thus, the collection of primary information occurred indirectly, with subjects being approached in both school and home environments. The questions (with five response options) were read aloud by the interviewers, and the respondents' answers were entered into the online questionnaire by the interviewers themselves. The questionnaire was hosted on the Google Forms digital platform.

The application of the research instrument in the field (online questionnaire) was divided into two stages: the application of a pre-test questionnaire, aimed at obtaining a preliminary view of the object of study, and the application of the final questionnaire. From this perspective, as emphasized by Chagas (2000), the importance of conducting a pre-test lies in the likelihood that not all problems and/or doubts that may arise during the initial application can be anticipated.

The samples consisted of high school students regularly enrolled and attending classes at EEMTI Coronel Alfredo Silvano, in the municipal seat of Reriutaba. The first application took place in April 2025, with 175 participants, and the second in July of the same year, with 98 interlocutors. The total sample comprised 61.17% of interlocutors residing in rural areas and 38.82% residing in urban areas of the municipality under study.

RESULTS AND DISCUSSION

When analyzing the individual population samples, it is observed that the first sample consisted of 42.8% of students residing in the urban area and 57.2% in the rural area of Reriutaba. The second sample, in turn, was composed of only 6.12% of residents from the urban area and 93.87% from the rural area. The study participants are between 15 and 22 years old and are regularly enrolled in the 1st year (45.78%), 2nd year (34.79%), and 3rd year (19.04%) of high school. In the initial sample, 83.4% of the subjects live with up to five people in the same household, while 16.6% live with more than five people.

Regarding the main source of family income of the study's interlocutors (Table 1), it is observed that, in the first sample, 45% of rural residents and 52% of urban residents report government benefits (for example, *Bolsa Família*, retirement pensions, and the “*pé de meia*” program) as their primary source of income. In the final survey, this source appears in second place, accounting for 27% among rural residents and 16.7% among urban residents, with agriculture emerging as the main source of income. This was confirmed by 45% of rural residents (PT*) and 50% of urban residents (PF**). It is also noteworthy that the second sample included only 6.12% of participants residing in the urban area of Reriutaba.

Table 1: Main source of family income for the study population sample.

Source of income	Rural area				Urban area			
	PT*		PF**		PT*		PF**	
	QT	%	QT	%	QT	%	QT	%
Government benefits	45	45	27	29,3	39	52	1	16,7
Public service	4	4	0	0,0	7	9,3	0	0
Agriculture	41	41	45	48,9	2	2,7	3	50
Fishing	0	0	1	1,1	0	0	0	0
Commerce	2	2	6	6,5	6	8	0	0
Other sources	7	7	13	14,1	21	28	2	33,3
Livestock	1	1	0	0	0	0	0	0
Total	100	100	92	100	75	100	6	100

Source: Field research, Reriutaba-CE, 2025

(*) Pre-test; () Final research"

Overall, as shown in Table 1, other activities were also highlighted by the respondents as their main source of family income, including public service, commerce, livestock farming, and fishing. In this scenario, 43 respondents (15.7%) reported other activities as their primary source of family income.

CONTEXTUALIZED EDUCATION AND THE PERCEPTION OF NATURE IN THE SEMI-ARID REGION OF RERIUTABA

When considering the understanding of the *sertanejo*'s relationship with nature in the semi-arid region, one must begin with the premise that subjects' conceptions of nature go beyond the sphere of objectivity. They are constituted through the intersubjectivity of individuals, within a dialectical relationship between natural and social factors in the process

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of constituting and reconstituting spaces historically occupied by human beings. The natural characteristics of this domain sharpen the resilience capacity of rural populations for coexistence with the semi-arid environment, giving rise to practical forms of knowledge about their habitual *locus* (FALCÃO SOBRINHO, 2006; DA SILVA; DA SILVA, 2024).

In the educational context, the state of Ceará offers two types of educational pathways in basic education: integrated secondary education with vocational training and regular secondary education. Of high school enrollments in 2020, 51,574 were in full-time classes, accounting for 15.4% of Full-Time Secondary Education. Currently, more than 75% of the state school system operates with extended school hours. The state network comprises 367 Full-Time Secondary Schools (EEMTI), 132 Vocational Education Schools (EEEP), 12 rural schools, and one Family Farm School (EFA) (CEARÁ, 2025).

The state public school system in Reriutaba includes two basic education institutions: one full-time secondary school, EEMTI Coronel Alfredo Silvano, and one vocational education school, EEEP Francisca Castro Mesquita, both located in the municipal seat. For the purposes of this study, the former institution was selected as the local focus, as it serves students from the 1st to the 3rd year of high school. According to QEDU (2025), total enrollment for the 2024 academic year at this school was 345 students, of whom 83 were enrolled in Youth and Adult Education (EJA) and 25 in Specialized Educational Assistance (AEE). According to data from the website, the IDEB score of this institution in 2024 was 4.0, and the student participation rate in the ENEM was 86%.

According to Falcão Sobrinho (2025a), contextualized education in the semi-arid region, with a focus on the teaching of Geography and its natural components, proves to be a fundamental strategy for promoting territorial appreciation and the development of students' critical environmental awareness regarding the space they occupy. In this sense, by integrating the environmental, social, and cultural specificities of the region into the educational process, students are encouraged to recognize the semi-arid region not only as a space of challenges but also as a territory rich in potentialities, through the exchange of knowledge between academia and the community, students and teachers. Thus, the data from the present study (Table 2) will be analyzed based on two population samples.

Table 2 – Geography Teaching and Perception of Nature, According to the Participants (Pre-test)

The content studied in geography classes

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They are related to the daily life in the countryside / living in the semi-arid region			They help to better understand the changes occurring in nature in the semi-arid environment, especially regarding climatic issues related to periodic droughts.			It helps to understand the main changes observed in the semi-arid environment.		
	Qt	%		Qt	%		Qt	%
Yes	129	73,7	Yes	155	88,6	AF	89	50,9
No	25	14,3	No	13	7,4	PTFDA	36	20,6
NSR	21	12,0	NSR	7	4,0	NSR	19	10,9
						ASE	31	17,7
Total	175	100		175	100		175	100

Source: Field research, Reriutaba-CE, 2025

AF – Physical aspects – drought, soil depletion, rising temperatures, deforestation

PTFDA – I notice all the factors highlighted in the previous options

NSR – Does not know how to answer

ASE – Socioeconomic aspects – increased poverty, decreased production, lack of employment and income

According to the majority of interlocutors (Table 2), the Geography contents studied at school are in some way related to everyday life in rural areas (73.7%) and help them better understand the changes that have occurred in nature in the semi-arid region, especially regarding climatic issues associated with periodic droughts (88.6%). The most commonly perceived factors are physical ones (50.9%), such as increases in ambient temperature, landscape deforestation, soil degradation, and the prolongation of dry periods. In this scenario, a direct relationship between theory and practice can be observed.

In the second sample (final survey), an analysis was carried out of the factors associated with the teaching of Geography and the subjects' perception of nature, whose understanding had not been sufficiently clear in the first sample (pre-test). In addition, other questions were included (Table 3).

Table 3: Geography Teaching and Perception of Nature, According to the Participants – Final Research

In geography classes											
Soil factors, the relationship between humans and nature, and living conditions in rural areas are topics:			The content helps to better understand the natural factors of the semi-arid region			The topic: CONTEXTUALIZED EDUCATION is a subject addressed			Practical activities take place, such as field trips, visits to specific locations, and/or workshops.		
	Qt	%		Qt	%		Qt	%		Qt	%
Always	44	44,9	Yes	73	74,5	Always	28	28,6	Always	14	14,3
Sometimes	45	45,9	No	10	10,2	Sometimes	52	53,1	Sometimes	18	18,4

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Never	3	3,1	NSR	9	9,2	Never	12	12,2	Never	60	61,2
Total	92	94		92	94		92	94		92	94

Source: Field research, Reriutaba-CE, 2025

In this sample scenario (Table 3), the majority of subjects reported that topics such as soil factors, the relationship between humans and nature, and living conditions in rural areas are addressed in Geography classes only occasionally (45.9%). However, for 74.5% of respondents, the contents studied in Geography classes help them better understand the natural factors of the semi-arid region, such as soil, climate, landscapes, and vegetation. For most participants in the study (53.1%), the topic “Contextualized Education for Coexistence in the Semi-Arid Region” is addressed in Geography classes only occasionally. Regarding the occurrence of practical classes, 60.2% of respondents stated that such classes have never taken place.

In this sample, some quite marked points of divergence can be noted in the respondents’ statements. In the first question, the difference between those who stated that the event occurs frequently and those who answered that it occurs only occasionally was 1 percentage point. In the second question, the divergence was much more pronounced, at 64.3 percentage points; in the third, the divergence was 46.9 percentage points; and in the last, the difference was 38.8 percentage points. Thus, it can be inferred that Geography activities occur predominantly in a theoretical format and within the classroom.

Regarding the interaction between subjects and the environment, associated with processes of use, occupation, production, and reproduction of spaces in the semi-arid region, the study sought to understand the relationship and perceptions of young people in Reriutaba concerning the *sertanejo* environment, as well as the influence of school-based education and access to information through ICTs on their decisions to remain in or leave rural areas (Tables 4 and 5).

Table 4: Relationship of Youth with the Countryside in the Semi-Arid Region of Reriutaba-CE (Pre-test)

Drought is...	The greatest challenges faced by rural youth		The greatest challenges faced by rural youth		The migration of rural youth to urban areas		The main reason for young people leaving the countryside							
	QT	%	QT	%	QT	%	QT	%						
FAH	20	11,4	Yes	87	49,7	ER	80	45,7	Yes	154	88,0	FOJ	55	31,4
FCES	102	58,3	No	68	38,9	AA	19	10,9	No	8	4,6	OFC	65	37,1

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FAC	21	12,0	NSR	20	11,4	AL	8	4,6	NSR	13	7,4	ADC	9	5,1
CMP	18	10,3				FOJ	59	33,7				TA	30	17,1
NSR	14	8,0				Outros	9	5,1				NSR	16	9,1
Total	175	100		175	100		175	100		175	100		175	100

Source: Field research, Reriutaba-CE, 2025

FAH – Phenomenon resulting solely from human actions on nature

FACES – Climatic phenomenon typical of the semi-arid region, affected by unregulated human activity

FAC – Purely climatic phenomenon

CMP – Main cause of rural population poverty

NSR – Does not know or preferred not to answer

FOJ – Opportunities for young people

OFC – Seeking other life opportunities outside the countryside

ADC – Increase in survival difficulties in rural areas

TA – All statements in the previous items are correct

ER – Employment and income

AA – Access to water

AL – Access to leisure

The study in question (Table 4) revealed that the majority of subjects understand drought as a natural climatic phenomenon typical of the semi-arid environment, FCES (58.3%); consider the *sertão* a good place for young people to live (49.7%); believe that the main challenges faced by rural youth are associated with the lack of employment and income – ER (45.7%); have perceived an increase in the migration of rural youth to urban areas in recent times (88%); and identify the main cause of this migration as the search for other life opportunities outside rural areas, OFC (37.1%).

In the final sample of the study (Table 5), an effort was made to correct some interpretative shortcomings of the first sample (pre-test), with the aim of better understanding the subjects' relationship with the object of study. In this sample scenario, it is noted that the majority of respondents (88%) understand the meaning of the word *brocar* as the process of clearing and preparing the soil for planting; 69.4% of this sample consider that rudimentary agricultural techniques in rural areas, such as *broca* and vegetation burning, are harmful and can cause irreversible damage to nature; for 64.3% of respondents, the countryside is a good place for young people; and 53% have already worked in the fields.

It is understood that the fact that most subjects in this sample have had work experience in rural areas, associated with life and production in this environment (Table 5), may indicate that their proximity to nature somewhat favors causal understanding and may facilitate

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comprehension of the topics addressed in Geography classes concerning the theme under study.

Table 5: Relationship of Youth with the Countryside in Reriutaba-CE (Final Research)

The meaning of the word BROCAR	Broca and burning vegetation as a production technique in the countryside		The countryside as a good place for young people to live				Have you ever worked on a farm (e.g., in crop cultivation, caring for animals in the countryside)?							
	Qt	%	Qt	%		Qt	%		Qt	%				
LTP	86	88	FMP	5	5,1		Sim	63	64,3		Sim	52	53	
APB	2	2	CDI	68	69,4		Não	21	21,4		Nunca	46	47	
NSS	9	9	NSR	25	25,5		Não sabe responder	14	14,3					
DA	1	1												
Total	98	100	Total	98	100			98	100		Total	98	100	

Source: Field research, Reriutaba-CE, 2025

LTP – Land clearing and preparation for planting

APB – Act of drilling with augers

NSS – Does not know the meaning

DA – A disease that affects trees

FMP – The form most harmful to nature

CDI – The most harmful form to nature, causing irreversible damage

NSR – Does not know or preferred not to answer

EDUCATION, RURAL YOUTH, AND THE WORLD OF WORK IN THE SEMI-ARID REGION OF RERIUTABA

According to the IBGE (2025), in 2023 the state of Ceará had 1.7 million urban youth and 453 thousand rural youth. Between 2012 and 2023, there was a 19.8% decrease in the contingent of young people aged 15 to 29 living in rural areas of the state. During the same period, the urban youth population declined by 10.5%. This scenario reflects the progressive decline in the fertility rate of Brazilian women, which in 1940 was 6.16 children per woman and, by 2022, had fallen to 1.55, corresponding to a decrease of 74.83%. In Ceará, the fertility rate in 2022 was 1.51 children per woman, equivalent to a reduction of 24.4% in relation to the aforementioned national rate (IBGE, 2025; DN, 2025).

In this context, according to QEDU (2025), 78.8% of young people in Ceará lived in urban areas, while 21.2% lived in rural areas. In the demographic scenario of Ceará in 2023, 51.1% of the state's youth aged between 15 and 29 lived below the poverty line, in a precarious social situation. Of this contingent, 19.9% had not completed basic education; 36%

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interrupted their studies due to the need to work; and 28% dropped out of school due to lack of interest.

Within this framework, Reriutaba stands out in the interior of Ceará for presenting new business opportunities and regular sales throughout the year. However, according to Caravela (2025), low internal consumption potential and local economic performance are the main points of concern. From a demographic perspective, Reriutaba is the eighth most populous municipality in the Sobral microregion, with 18.6 thousand inhabitants and a GDP of R\$ 190.7 million, of which 45% derives from public administration; 34.8% from the services sector; 12.4% from agriculture and livestock; and 7.8% from industry.

In the current economic scenario of Reriutaba, 20.25% of households in the municipality have a monthly per capita income of up to one-eighth of the minimum wage, and 8.98% report no income at all. Overall, 57.84% of the population had a monthly per capita income of up to one-half of the minimum wage in 2010. Among the districts of Reriutaba, Campo Lindo stands out for having the worst situation in this regard, given that 35.56% of its population has a monthly per capita income of up to one-eighth of the minimum wage, and 8.81% of the local population has no income whatsoever (IBGE, 2025).

The municipality of Reriutaba currently has 1.6 thousand formal jobs, with predominant occupations in the following areas: building janitor (182 positions); elementary school teacher with a higher education degree – 1st to 4th grades (155 positions); and security guard (110 positions). The average remuneration of formal workers is R\$ 1.9 thousand, below the state average of R\$ 2.8 thousand. The three activities that employ the most workers in the municipality are public administration (1,193 positions), retail trade in mini-markets (56 positions), and internet service providers (51 positions) (CARAVELA, 2025).

According to QEDU (2025), the low level of qualification and the little or nonexistent professional experience of young people in Reriutaba hinder their formal insertion into the labor market. Often, especially among less educated individuals, opportunities are found only in the informal sector, working without formal contracts, as informal self-employed workers or performing small “odd jobs,” under precarious conditions, with low wages and few future prospects.

From this perspective, the following section presents an analysis of data on the subjects' expectations regarding the world of work and their relationship with rural life in the semi-arid region of Reriutaba (Table 6).

Table 6: Professional Training and Living in the Semi-Arid Region, According to the Participants

	Intended field of study				Relationship of the intended field of study with life in the countryside				
	PT*	%	PF**	%		PT*	%	PF**	%
Education	11	6,3	12	12,2	Yes	77	44,0	27	27,6
Engineering	15	8,6	3	3,1	No	86	49,1	44	44,9
Public Security	10	5,7	5	5,1	Maybe	12	6,9	27	27,6
Civil Construction	4	2,3	0	0,0					
Administration	29	16,6	2	2,0					
Commerce	11	6,3	1	1,0					
Other	95	54,3	75	76,5					
Total	175	100	98	100		175	100	98	100

Source: Field research, Reriutaba-CE, 2025

(*) - Pre-test; () - Final research"***

In the sample scenario presented (Table 6), it is observed that the majority of subjects in the study from the first sample (PT) – 54.3% – and from the second sample (PF*) – 76.5% – did not choose any of the areas presented in the interview, selecting the “other” option. This indicates that their professional aspirations are not associated with the main employment sectors of the municipality. In the first sample scenario (PT*), 16.6% of subjects wish to pursue a career in administration; 8.6% in engineering; 6.3% in the commercial and education fields, respectively; 5.7% in public security; and only 2.3% in the construction sector.

It is noteworthy that in the second sample (PF**), the education field appears in first place (12.2%), followed by public security (5.1%), engineering (3.1%), administration (2%), and commerce (1%). In the general context, among the areas most cited by participants as future professional goals are education, medicine, veterinary medicine, psychology, public security, and football.

With the exception of veterinary medicine, most of the professional areas desired by the subjects have no direct connection to rural life (e.g., agronomy, animal husbandry, among others). For 47.6% of subjects, their professional aspiration has no relation to rural life. However, 38% of respondents believe that their intended profession is directly related to the countryside, and 21.9% of participants believe there may be some connection.

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Regarding the relationship between school education, professional training, and rural life (Table 7), 19.4% (PT*) of subjects report that their main motivation for studying is an interest in learning more about the semi-arid environment and rural life. For 30.6% (PF**), studies represent an opportunity to leave the countryside; 7.1% (PF**) study because they wish to pursue a profession in a field unrelated to rural life, and 49% (PF**) of the sample either did not know or preferred not to answer.

It is noteworthy, in this sample (Table 7), that 87.4% of subjects believe that school education and access to information through ICTs influence their decision to leave the countryside, encouraging them to envision professional areas different from those associated with production and rural life. This indicates that urbanized school education, combined with greater access to information for rural students, can be considered a catalyzing factor in the process of de-naturalizing nature and breaking paradigms regarding individuals' relationship with the environment and their place of residence.

Table 7: Motivation of Youth in Reriutaba to Study

	Main motivation to study				School education and ICTs			
	PT*	%		PF**	%		PF**	%
Government benefits	35	20,0	Friends	9	9,2	Yes	153	87,4
Learning more about the countryside	34	19,4	School	1	1,0	No	22	12,6
Family	28	16,0	Family	3	3,1			
Getting a job	5	2,9	Option to leave the countryside	30	30,6			
No external motivation	67	38,3	Does not know/preferred not to answer	48	49,0			
Other	6	3,4	To do something different	7	7,1			
Total	175	100		98	100		175	100

Source: Field research, Reriutaba-CE, 2025

(*) - Pre-test; () - Final research"

FINAL CONSIDERATIONS

The present study was conducted based on a robust amount of primary data, collected in situ through the application of a semi-structured questionnaire, as well as through bibliographic research in official and academic sources regarding the subject under investigation. The objective was to test the initial hypothesis of the study: that school

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education, the teaching of Geography, and access to ICTs by young people in the semi-arid region of Reriutaba act as factors contributing to a paradigm shift in the conception and interest of rural youth regarding their habitual locus. The results confirmed this hypothesis.

The total sample was composed mainly of subjects residing in rural areas, aged between 15 and 22 years, all high school students in the municipal seat, the majority of whom live with up to five people in the same household. According to the study, most respondents have government benefits (e.g., *Pé-de-Meia* and *Bolsa Escola*) as their main source of family income, followed by agriculture. This fact reveals that the majority of participants come from modest family backgrounds.

According to the census (IBGE, 2025), the educational results in Reriutaba (IDEB) surpassed state and national indices in 2023, both in the initial and final years of schooling, with scores of 7.2 and 5.9, respectively. In this context, the IDEB of EEMTI Coronel Alfredo Silvano, the institution where this research was conducted, was 4.0, with an unsatisfactory learning index: 19% in Portuguese and 4% in Mathematics, reflecting a decline between 2016 and 2023 in these components (QEDU, 2025).

The study shows that the content taught in Geography classes relates to the constitutive factors of the semi-arid *sertanejo* landscape and helps students better understand the socio-economic and spatial dynamics of this natural domain. Themes associated with contextualized education for coexistence with the semi-arid environment are recurrent in Geography classes; however, they generally occur within a theoretical, in-classroom framework, since practical activities, according to the study participants, never occur or occur only sporadically.

The research revealed that most subjects have a good understanding of the relationship between humans and the environment, as well as the consequences of anthropogenic actions on nature in the processes of land use and occupation in the semi-arid *sertanejo* environment of Reriutaba. Although participants recognize the countryside as a suitable place for youth, the majority of the sample sees school education as an opportunity to pursue professional training in fields associated with urban life.

However, most of the professional fields desired by participants do not correspond to the main sectors that form the economic base of Reriutaba. In this sense, school education and access to information through ICTs may serve as pathways for students to acquire new

knowledge and explore possibilities beyond their habitual locus, fostering an urbanized life outlook as an alternative to the increasing challenges of rural life in the *sertanejo* environment.

Considering the evidence presented in this manuscript, it is deemed necessary to restructure the pedagogical curriculum of schools located in the semi-arid environment, which directly serve rural populations. This is because the education provided in these institutions primarily focuses on developing competencies and skills associated with urban settings, overlooking the dialectical relationship between countryside and city, the individual and nature, and undervaluing the historical, economic, and cultural importance of the local environment in shaping regional ethnic identity.

In this regard, it is understood that an appropriate curriculum to better address the issues raised should integrate the principles of contextualized education for coexistence with the semi-arid environment, in conjunction with urbanized education content. The local place should serve as the object of study, and local subjects as protagonists of the teaching-learning process, taking into account their life experiences in the countryside and the natural factors of the semi-arid region as resources for the construction of new knowledge, the *good living bem viver*, (Figueiroa et al., 2025), and the creation of new strategies for production and coexistence in the *sertanejo* environment.

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