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FIELD PRACTICE AS A STRATEGY FOR TEACHING NATURAL SCIENCES IN PROMOTING SUSTAINABLE EDUCATION

A PRÁTICA DE CAMPO COMO ESTRATÉGIA DE ENSINO DAS CIÊNCIAS NATURAIS NA PROMOÇÃO DA EDUCAÇÃO SUSTENTÁVEL

PRÁCTICAS DE CAMPO COMO ESTRATEGIA PARA LA ENSEÑANZA DE LAS CIENCIAS NATURALES EN LA PROMOCIÓN DE LA EDUCACIÓN SOSTENIBLE

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ABSTRACT

The teaching-learning process nowadays has encountered many challenges, such as the lack of interest of students, the use of inefficient methods and techniques or the lack of preparation of teachers that results in unsatisfactory learning of students. For this reason, field practice can be an option to raise the motivational levels of students and favor a more meaningful learning for the new generations, so that they can be bearers of a culture of change that makes sustainable human development a reality. This article presents a descriptive research, with a quantitative-qualitative methodology model, to carry out the research, theoretical, empirical and mathematical-statistical methods were used. For data collection, interviews with teachers and surveys to students in the form of questionnaires were used. Based on the diagnosis, a proposal was presented to improve the problem, to allow the student to achieve a solid understanding of local hydrography, which enables the establishment of logical relationships between objects and phenomena through geographic regularities, stimulates the mental activities of students and develops independent activity and also meaningful learning.

The development of field classes in students who are preparing to be teachers is fundamental for their future profession, which was a concern of the different experts in the teaching-learning process.

Keywords: Field practice. Environmental awareness.

RESUMO

O processo de ensino-aprendizagem nos dias actuais, tem encontrado muitos desafios, sejam elas a falta de interesse dos alunos, o uso de métodos e técnicas ineficientes ou o despreparo dos professores que resulta em uma aprendizagem insatisfatória dos alunos. Por esta razão a prática de campo pode ser uma opção para elevar os níveis motivacionais dos alunos e favorecendo uma aprendizagem mais significativa às novas gerações, a fim de que possam ser portadoras de uma cultura de mudança que faça realidade o desenvolvimento humano sustentável. O presente artigo apresenta uma investigação

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Descritiva, com um modelo de metodologia quantitativo-qualitativo, para concretização da investigação empregou-se os métodos a nível teóricos, empíricos e matemáticos estatísticos. Para a recolha de dados foi utilizado, aplicação de entrevista aos professores e inquéritos aos alunos em forma de questionário aos alunos. Mediante ao diagnóstico apresentou-se uma proposta de de trabalho de para melhorar o problema, para permitir ao aluno atingir uma compreensão do solida sobre a hidrografia local, ao qual possibilita o estabelecimento de relações lógicas entre os objectos e fenómeno através das regularidades geográficas, estimula a actividades mental dos alunos e desenvolve uma actividade independente e também aprendizagem significativa.
O desenvolvimento das aulas de campo nos estudantes que se preparam como professores é fundamental para sua futura profissão, o que constituiu uma preocupação dos diferentes especialistas do processo de ensino-aprendizagem.

Palavras-chave: Prática de campo. Consciência ambiental.

RESUMEN

El proceso de enseñanza-aprendizaje actual se enfrenta a numerosos desafíos, como la falta de interés del alumnado, el uso de métodos y técnicas ineficientes o la falta de preparación del profesorado, lo que resulta en un aprendizaje insatisfactorio. Por ello, las prácticas de campo pueden ser una opción para elevar la motivación del alumnado y favorecer un aprendizaje más significativo para las nuevas generaciones, de modo que puedan ser portadores de una cultura de cambio que haga realidad el desarrollo humano sostenible. Este artículo presenta una investigación descriptiva, con un modelo metodológico cuantitativo-cualitativo. Para llevar a cabo la investigación, se emplearon métodos teóricos, empíricos y matemático-estadísticos. Para la recopilación de datos se emplearon entrevistas al profesorado y encuestas al alumnado mediante cuestionarios. Con base en el diagnóstico, se presentó una propuesta para mejorar el problema, permitiendo al alumnado lograr una sólida comprensión de la hidrografía local, lo que facilita el establecimiento de relaciones lógicas entre objetos y fenómenos a través de regularidades geográficas, estimula la actividad mental del alumnado y desarrolla la actividad independiente, así como el aprendizaje significativo. El desarrollo de prácticas de campo en estudiantes que se preparan para ser docentes es fundamental para su futura profesión, lo cual fue una preocupación de los diferentes expertos en el proceso de enseñanza-aprendizaje.

Palabras clave: Práctica de campo. Conciencia ambiental.

INTRODUCTION

The teaching of school Geography, nowadays, has encountered many challenges, whether they are the lack of interest of students, the use of inefficient methods and techniques or the lack of preparation of teachers that results in unsatisfactory student learning (Bergamasco and Meneguzzo, 2013). For this reason, field practice can be an option to raise students' motivational levels and favor more meaningful learning. As stated by Silva and Junior (2016) The field class is one of the methodological practices that is currently being widely used by teachers, as a way to consolidate the theory, worked with textbooks in the classroom. Contact with reality contributes to the teaching-learning process in the discipline of geography, as it provides the learning of essential themes.

In this context, the authors consider that, through field practices, it is likely that it is possible to expand the sense of awareness in students about the preservation of the environment, which ends up including the conscious use of the soil. According to Bergamasco and Meneguzzo (2013), the study of soils is an opportunity to put into practice the field class in geography, since enriched by critical theory it can contribute to a better analysis and interpretation of the relationship between capitalist society and land use in rural areas and its consequences. In the same perspective, Santos and Benevides (2015) state that soil education is presented as a didactic methodological process that promotes "Pedological Awareness" with the purpose of environmental preservation in the relationship between man and nature. It should also be noted that the thinking of Bergamasco and Meneguzzo (2013) states that the study of the soil through the field class becomes pertinent, as it is part of the local reality, facilitating field practice, contributing to learning and transformation of reality.

From the point of view of Zancanaro and Carneiro (2012) in teaching, different methodologies are adopted, among which one, of extreme importance for the teaching of natural sciences, is represented by field activities. In this perspective, Zancanaro and Carneiro (2012) recommend that the teacher of this science, as he is also an inquirer of the space built by societies, should play a fundamental role in helping the student in the process of understanding and questioning the spatial dynamics, through the investigation of the living space. In this sense, the authors consider that field practices constitute a good methodology with applicability to be employed in the teaching-learning process of Geography related to Hydrography.

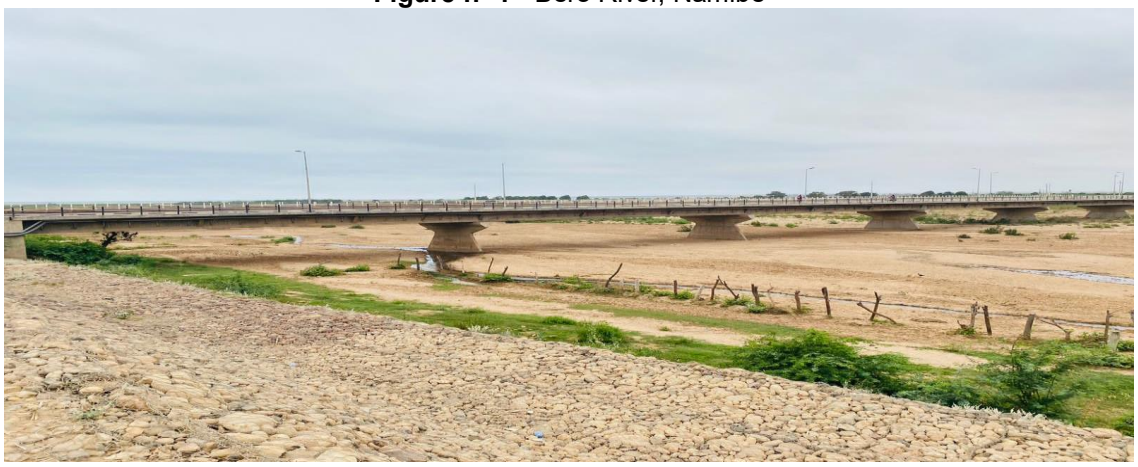
Within the school context, it currently presents a series of difficulties, mainly the lack of interest of students in geographical studies. In view of this finding, it is essential for the teacher to seek methods and techniques that help to arouse the interest of students in the

discipline. Among the methodological guidelines and didactic resources that can be used, it is quite pertinent to develop research related to field practice for the construction of a critical awareness in students through the challenges that the current world brings us in its different facets.

Thus, rivers are considered "veins" of the planet, being essential for the maintenance of biodiversity and ecological balance. According to Strahler and Strahler (2017), "rivers are not only sources of water, but also corridors of life that sustain complex ecosystems". Through their study, students can understand the importance of hydrological cycles, the dynamics of aquatic ecosystems, and the influence of rivers on human activities, such as agriculture, industry, and transportation.

Rivers play a significant role in the culture and history of civilizations. Many cities developed along waterways, and their presence shaped social and economic practices. As de Souza and Silva (2020) state, "rivers are testimonies of the evolution of societies, reflecting the interactions between man and the environment over time". Therefore, teaching about rivers must integrate not only physical aspects, but also social and cultural aspects.

Figure nº 1 - Bero River, Namibe



In the school context, the study of rivers in natural sciences can be approached in different ways, using active methodologies that stimulate research and critical reflection. The use of maps, field visits and interdisciplinary projects are some of the strategies that can enrich learning. According to Almeida and Costa (2019), "meaningful learning occurs when students are actively involved in the construction of knowledge, connecting theories with the reality that surrounds them".

The integration of digital technologies in the teaching of natural sciences can also facilitate the understanding of rivers. Tools such as GIS (Geographic Information Systems)

allow students to analyze geospatial data, visualizing the distribution and dynamics of rivers at different scales. According to Ferreira (2021), "technology offers new opportunities for geographic education, allowing students to explore and experiment with real-time data".

Despite its importance, the study of rivers faces several challenges today. Pollution, uncontrolled urbanization, and climate change have negatively impacted the quality and quantity of water available. The degradation of river ecosystems results in severe consequences, such as the loss of biodiversity and the alteration of hydrological cycles. As Lima and Santos (2022) point out, "the water crisis is a reality that requires an educational approach that sensitizes the new generations to the preservation of water resources".

For Stoltz, when one teaches, one must, in the first place, seek the knowledge that the student already brings, leading him to reflect on the content with which he will work, building a new understanding. It is of fundamental importance that the class is not only expository with the exclusive speech of the teacher, but must work in such a way that the student relates the content to what he knows and perceives what he does not know, interacting with the new learning.(2012)

According to Alexandre, learning is understood as a process of transformation of the behavior acquired through the experiences raised by factors related to neurological, environmental and emotional aspects, derived from the interaction between mental structures and the environment in which they are inserted, and the conceptions and customs that each individual distinguishes and evaluates as appropriate must be taken into account. (2010)

The teaching-learning process that does not contain the problems of life, does not motivate, does not interest, does not educate and in essence does not teach, instruct, or achieve its objectives.

The teaching-learning unit is materialized in the interconnection of two inseparable moments: active transmission/assimilation of knowledge and skills, within the specific conditions of each didactic situation. The main function of teaching is, therefore, to ensure the process of transmitting the contents of school knowledge and, through this process, the development of students' cognitive capacities. (Libâneo, 1994)

Knowing how to teach is not transferring knowledge, but creating the possibilities for its own production or construction. (Freire, 1996)

Meaningful learning, proposed by Ausubel (2003), highlights the importance of connecting new knowledge to existing cognitive structures. This connection is essential for students to be able to relate geographical concepts to their local experiences and realities.

As Lima (2020) states, "the teaching of Geography must be contextualized, allowing students to make relationships between the content and their daily lives" (p. 112).

Active methodologies have gained prominence in the teaching of Geography, promoting a more effective participation of students in the learning process. According to Silva and Santos (2021), "active methodologies stimulate students' autonomy and protagonism, making learning more dynamic and engaging" (p. 78). Activities such as projects, group work and the use of digital technologies are examples that can enrich geographical teaching.

Assessment is an essential component of the teaching-learning process. In Geography, it is important that the assessment is not restricted to tests and tests, but that it also considers the participation of students in practical activities and projects. According to Perrenoud (2000), "evaluation is a pedagogical act that must consider the student's global development, skills and competences" (p. 87). This view broadens the concept of assessment and seeks a more comprehensive understanding of learning.

The incorporation of technologies in the teaching of natural sciences has transformed the way content is presented and assimilated. Tools such as geographic information systems (GIS), mapping applications, and digital platforms can facilitate the visualization and analysis of spatial data. According to Almeida and Ferreira (2022), "the use of digital technologies in the teaching of Geography and Biology not only engages students, but also prepares them for the demands of the contemporary labor market" (p. 45). Technology, therefore, should not be seen only as a resource, but as a central element in pedagogical practice.

The initial and continuing training of Geography teachers is essential to ensure the quality of teaching. Training programs should address both the specific contents of Geography and teaching methodologies. According to Ribeiro (2019), "continuous training is essential for teachers to update themselves and develop new practices that meet the needs of students" (p. 72). Critical reflection on teaching practice is an important aspect that should be encouraged in training.

The teaching-learning process is a complex dynamic that involves the interaction between educators and students, mediated by content and contexts. In the field of Geography, this relationship is even richer, as the discipline not only transmits knowledge about space, but also promotes a critical understanding of social and environmental relations.

Learning is an active process, where students construct meanings from experiences and interactions. Teaching, in turn, must be planned to facilitate this construction of

knowledge. According to Piaget (1976), "learning occurs when the student is able to assimilate new knowledge to his mental schemes" (p. 82). This assimilation is crucial for the teaching of Geography, which often involves the application of concepts in real contexts.

One of the pillars of teaching-learning is contextualization. Geography should be taught from the students' local reality, allowing them to make connections between the content and their daily experiences. According to Pereira (2019), "the contextualization of Geography teaching makes learning more meaningful, as students can see the relevance of what they are studying" (p. 56). This approach not only motivates students but also makes it easier for them to understand complex concepts.

Active methodologies are essential for the teaching of Geography, as they promote the active participation of students. Activities such as debates, research projects, field visits and the use of digital technologies allow students to become protagonists of their learning. According to Costa and Almeida (2020), "active methodologies encourage collaboration and critical thinking, fundamental skills for the formation of conscious citizens" (p. 90).

Didactic resources play a crucial role in the teaching and learning of Geography. Maps, globes, infographics, and digital tools are indispensable for visualizing geographic data and concepts. According to Martins (2021), "the use of visual resources facilitates the understanding of complex information and stimulates students' curiosity" (p. 73). The diversity of resources also caters to different learning styles, making teaching more inclusive.

The teaching assessment of the natural sciences should be formative, that is, it should accompany the learning process and provide continuous feedback to students. This approach allows educators to identify students' difficulties and adjust their pedagogical practices. According to Andrade (2022), "formative assessment is a powerful tool to promote learning, as it helps students to reflect on their progress and set goals" (p. 44).

The teaching of Geography and Biology must be intrinsically linked to the formation of critical and responsible citizens. The course offers tools for students to analyze issues such as social inequality, sustainability and human rights. According to Freire (2019), "education should be an act of freedom, where students become agents of social transformation" (p. 29). In this way, the teaching of Geography should encourage reflection and action in favor of a fairer society.

The use of innovative pedagogical practices, combined with the use of technologies and the appreciation of diversity, are essential to form critical and conscious citizens. Geography, therefore, is not only a school subject, but a powerful tool for understanding and social transformation.

Through it, students can explore issues such as climate change, natural resource use, and environmental conservation. The critical approach to teaching Geography can sensitize students to the importance of sustainability. According to Santos and Almeida (2020), "geographic education should promote environmental awareness, preparing students to be agents of change in their communities" (p. 88).

Fieldwork is important in the teaching of natural sciences, it is a tool that contributes to the teaching and learning process of students. Most of the time students like this work, as it is a way to get out of the classroom routine and explore new ways in various environments and thus this work contributes to the development of practical knowledge.

According to Souza and Pereira (2007, p.2) fieldwork is "any and all research and exploratory activities that take place outside the school environment. It is an important didactic instrument in the teaching of Geography, a science that is responsible for explaining the phenomena resulting from the relationship between society and space".

In this sense, it is important to highlight the importance of fieldwork in natural sciences teaching classes, since it has a wide range of interrelated themes, providing different forms of approaches in the field.

Campian, et. al. (2007, p.4), emphasize that fieldwork performs four functions:

- Illustrative: whose objective is to illustrate the various concepts seen in the classroom;
- Motivating: where the objective is to motivate the student to study a certain topic;
- Coach: which aims to guide the execution of a technical skill;
- Problem generator: which aims to guide the student to solve and propose a problem.

Thus, it is highlighted that fieldwork performs functions that are fundamental for the formation of knowledge, providing an opportunity with practical reality according to the theme that has been addressed. It provides not only contact with practice, but also encourages students to make their own interpretations and questions in the face of the proposed reality, stimulating the development of critical thinking. It is a moment of construction and sharing with the new, a way of approximating theoretical knowledge with empirical reality, providing a sense of pleasure to the pedagogical practice that the educator proposes (Cordeiro and Oliveira, 2011).

In the development of fieldwork, it is up to the teacher to plan the lesson according to what has been developed in the classroom, so that all the aspects proposed by the planning can be explored in the field, contemplating the subjects that have been developed by the teacher in the classroom.

The ability to analyze and interpret hydrological data is a skill that is increasingly valued in the job market. Therefore, the inclusion of hydrography in the school curriculum prepares students to face future challenges related to environmental management and sustainable development (Pereira, 2023).

The teaching of hydrography can be enriched with active methodologies that encourage student participation. The use of digital technologies, such as geoprocessing software and water quality monitoring applications, can facilitate the understanding of hydrological concepts. According to Almeida and Souza (2020), these tools allow students to carry out practical analysis and develop projects that address real problems in their communities.

In addition, interdisciplinarity is a valuable approach in teaching hydrography. Integrating hydrography with disciplines such as biology, chemistry, and social sciences can provide a more holistic and comprehensive view. For example, by studying the pollution of a river, students can explore not only the chemical aspects of water, but also the social and economic consequences of this pollution (Lima, 2021)

FRAMING OF THE THEME IN THE EDUCATION SYSTEM IN ANGOLA

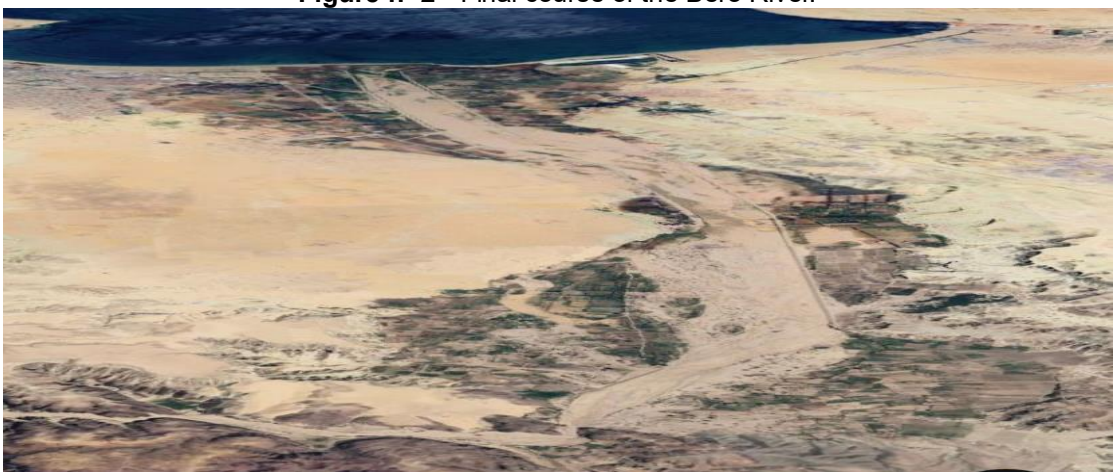
Education in Angola faces complex challenges, but the inclusion of the theme of rivers in the teaching of Geography can serve as a catalyst for environmental awareness and the promotion of sustainability. Rivers, as vital resources, play a crucial role in the country's culture, economy, and ecology, and their inclusion in the school curriculum is essential for forming informed and responsible citizens.

Angola has a rich water diversity, with rivers that are fundamental for agriculture, transportation, and water supply. However, environmental degradation and pollution of rivers are growing concerns (Brito et al., 2021). Environmental education is, therefore, a pressing need. Ferreira and Almeida (2019) state that environmental education should be integrated into the school curriculum to enable students to understand the interactions between the environment and human activities.

In addition, environmental education promotes active citizenship. By sensitizing students about the importance of rivers, education can lead to the formation of a generation that values and protects natural resources (Melo & Dias, 2022).

Integrating the theme of rivers into the Geography curriculum in Angola requires a contextualized and practical approach. Ward's (1989) classification can be used as a basis for teaching about the country's rivers, allowing students to explore their characteristics and importance.

Figure nº 2 - Final course of the Bero River.



3. Source: Google Earth

The implementation of the theme of rivers in the education system faces several challenges, such as the lack of didactic resources and inadequate teacher training. Silva and Santos (2020) highlight that the scarcity of pedagogical materials limits the ability of educators to teach effectively.

However, there are opportunities to overcome these challenges. Partnerships with NGOs and academic institutions can provide resources and training for teachers. Continuous training is crucial to empower educators to use active methodologies, such as project-based learning and field visits (Pereira, 2021).

The interdisciplinary approach is fundamental to environmental education. Integrating knowledge of Biology, Chemistry, and Social Sciences allows students to understand the complexity of river systems. Costa et al. (2018) emphasize that this holistic approach is essential to develop a critical awareness of environmental challenges.

Teacher training is a crucial aspect for the effective implementation of the river theme in the curriculum. Training should include not only theoretical content, but also teaching methodologies that encourage student participation and engagement. According to Melo and Dias (2022), continuous training should be a priority to ensure that educators are up-to-date on best practices in environmental education.

Training programs can include workshops, online courses, and exchanges with other institutions that already successfully implement environmental education. This not only improves the quality of teaching, but also empowers teachers to become agents of change in their communities.

Community participation is essential for the effectiveness of environmental education. Involving parents, community leaders, and local organizations in school activities can create a sense of collective responsibility for the preservation of rivers. Pereira (2021)

argues that collaboration between schools and communities is key to promoting a culture of conservation.

Integrating the theme of rivers into the education system in Angola is a vital strategy to promote environmental education and sustainable management of water resources. Through the inclusion of this topic in the Geography curriculum, students can develop a deep understanding of the interactions between humans and the environment, preparing them to face the challenges of the future.

Overcoming existing challenges, coupled with an interdisciplinary approach and the promotion of practical activities, can transform education in Angola, empowering students to become advocates for sustainability and conservation of river ecosystems. Education, therefore, becomes a powerful instrument for social and environmental transformation in the country.

MATERIALS AND METHODS

For all intents and purposes, the typology of Studies of the present work, with regard to its approach, the methodology is qualitative and quantitative, and the type of research is descriptive because it is the first study on the subject in question.

THEORETICAL LEVEL METHODS

- Historical-logical: it was used in the study of the history of the problem and the laws and regularities that govern them, determining its logical behavior in its contextualization.
- Analysis-Synthesis: To analyze all the literature, investigative works, normative documents and draw conclusions about the different parts of the instruments applied in the diagnosis.
- Reflection-Deduction: To make generalizations about the types of impacts and anthropogenic actions resulting from certain activities in the process of interaction with the environment.

EMPIRICAL LEVEL METHODS

- Document analysis: A series of important documents such as other monographs, educational projects and internet articles related to the research theme were used to review in order to obtain credible information, in addition to verifying the problem being investigated.

- Teacher survey (questionnaire): it was applied to teachers, which will allow us to acquire useful information for the research process. This information was obtained through a previously prepared written questionnaire from the selected sample.
- Student survey (questionnaire): It allowed to obtain information about the learning of the profile of rivers in the teaching-learning process of natural sciences;
- Triangulation: It served to elaborate generalizations of the results taking into account the methodologies applied.

MATHEMATICAL-STATISTICAL METHOD

- Percentage calculation: To process the information at the end of the questionnaire, from observation, to reach the quantitative conclusion.
- Descriptive statistical: allowed the tabulation of data and the elaboration of graphs.

RESULTS

It was applied to the teachers, in total there were 4 teachers, which allowed the acquisition of useful information for the research process. This information was obtained through a previously prepared written questionnaire from the selected sample.

Thus, in the first question, we tried to find out if you have ever addressed the topic related to the profile of rivers in Geography classes? In this question, 1 teacher answered yes that he had already addressed the theme, equivalent to 25% and 2 teachers answered no, equivalent to 50%, and 1 teacher said that sometimes, equivalent to 25%.

Graph nº1 - *Approach to the Profile of the river in Geography classes.*

Source: Prepared by the authors.2024

This distribution indicates a diversity of approaches among educators. The fact that half of the teachers did not address the topic in a formal way may suggest a gap in the curriculum or a lack of emphasis on the importance of this specific subject. The variation in responses may also reflect different school contexts or teachers' personal experiences in relation to the teaching of Geography. A graph that illustrates this information can help to visualize the need for greater integration of the theme in the classes, promoting a reflection on the methodologies used.

In the second question, what visual rejections have you used to address the theme of the profile of rivers in Geography classes? The 4 teachers answered that they frequently use maps, corresponding to 100%.

Graph nº2 *- Didactic resources used in classes.*

Source: Prepared by the authors.2024

This is a positive point, as it indicates a uniformity in the choice of visual resources that are fundamental for spatial and geographical understanding. The use of maps can facilitate the visualization and understanding of concepts related to rivers, such as their physical characteristics and interaction with the environment. However, the exclusivity of the maps can limit the didactic approach. It would be interesting to explore other resources, such as videos, models or interactive activities, which could further enrich students' learning.

In the third question, we sought to know if the teachers believe that the approach to this theme is an impetus for a meaningful learning? The 4 teachers who yes, who frequent aborading of this subject in Geography classes would contribute to a meaningful learning, 100% corrosspondent.

Graph nº3 *- Contribution of the theme in meaningful learning.*

Source: Prepared by the authors.2024

This unanimity is encouraging and suggests that educators recognize the relevance of the theme in the education of students. Meaningful learning occurs when students are able to relate new knowledge to previous experiences, and the theme of rivers can be an excellent starting point for discussions about ecology, physical geography and the importance of water resources. The confirmation that this approach is seen as beneficial is an indication that teachers are aware of the positive impact that their pedagogical practices can have on the critical education of students.

In the fourth and last question to the teachers, is field practices for the study of the profile of rivers with students necessary in the institution? The teachers answered yes, it is necessary to carry out practical activities to contribute even more to the learning about the theme in the teaching-learning process of Geography.

Graph nº4 *- Importance of field activities in learning about rivers.*

Source: Prepared by the authors.2024

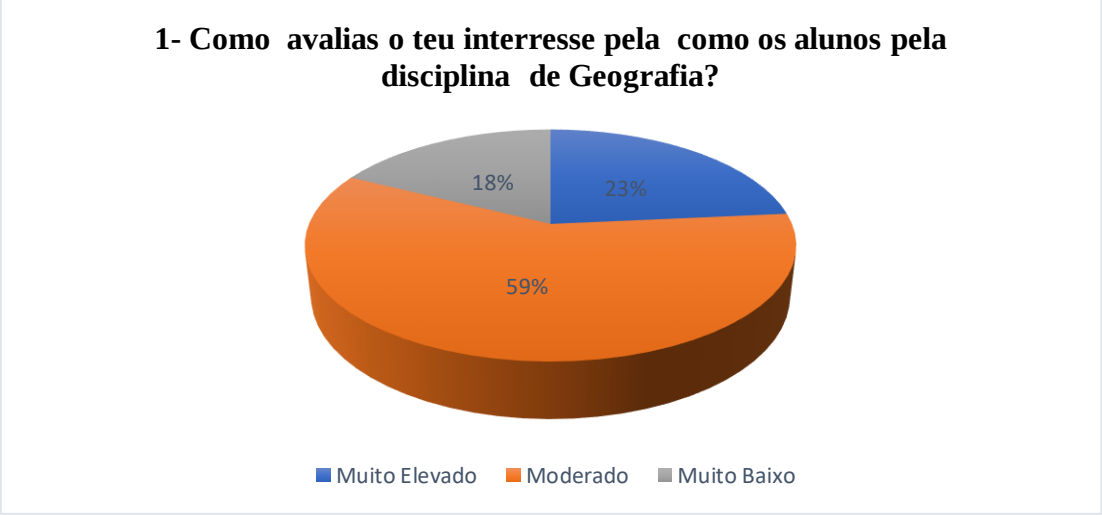
This response highlights the importance of active and experiential learning, which is fundamental to the teaching of Geography. Field activities provide students with the opportunity to directly observe natural phenomena, fostering a deeper connection with the content. In addition, these experiences can stimulate students' interest in the discipline, making learning more engaging and practical. The emphasis on the need for these activities suggests that the institution values teaching that goes beyond the classroom, recognizing the importance of practice in the educational process.

RESULTS OF THE STUDENT SURVEY

It was applied to teachers, which will allow the acquisition of useful information for the research process. This information was obtained through a previously prepared written questionnaire from the selected sample.

In the first question, we sought with the do you evaluate your interest in how students in the discipline of Geography? 8 students answered very high, equivalent to 19.5%, 20 students answered moderate, which is equivalent to 48.8% and 6 students answered very low, 14.6%.

Graph nº5-Level *of interest in the Geography discipline.*



Source: Prepared by the authors.2024

The distribution of responses is quite revealing: the majority of students (48.8%) show moderate interest, while a smaller proportion (19.5%) indicate very high interest. This suggests that, although a significant part of students have a reasonable interest in the subject, there is a need for pedagogical strategies that can increase students' enthusiasm

and motivation. The fact that 14.6% of pupils express very low interest is also worrying and may indicate the need for a revision of the curriculum or teaching methodologies used.

In the second question, we tried to find out from the students if they know what a profile of a river is? Of the 41 students, 25 answered yes, corresponding to 41% and 16 students answered no was equivalent to 59%.

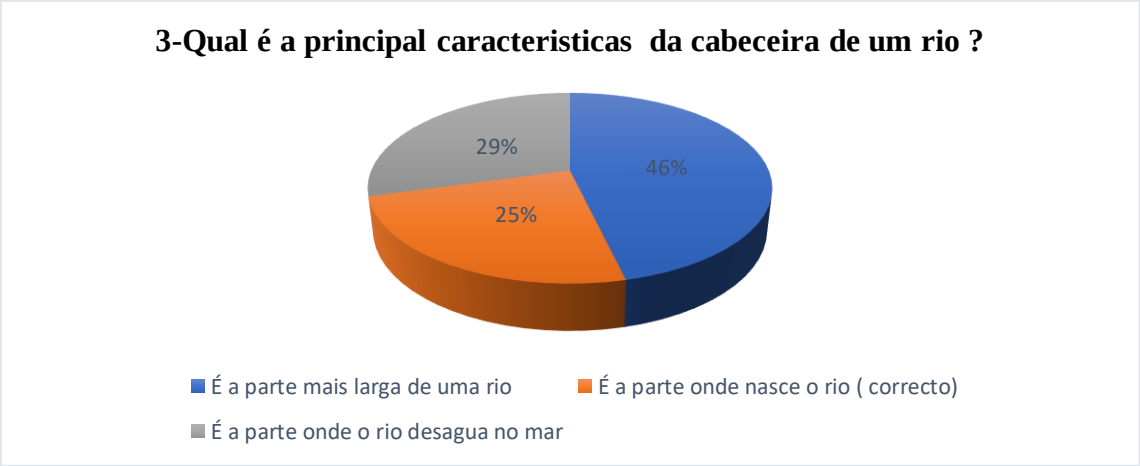
Graph nº6 *- Knowledge about the profile of a river.*

Source: Prepared by the authors.2024

The answer indicates that only 41% of the students said they knew what it is, while 59% said they did not. This discrepancy is alarming, as it suggests that more than half of the students do not have a basic understanding of a fundamental concept in Geography. This may reflect gaps in teaching or in the way content is presented. The low knowledge rate can impact students' ability to understand more complex concepts related to hydrography and Geomorphology.

In the third question, we sought to know about the main characteristics of the headwaters of a river? In this question, 19 students answered that it is the widest part of a river, which is not correct, equivalent to 46.3%, 10 students answered the part where the river originates, equivalent to 24.4% and 12 students answered that it is the part where the river flows into the sea, corresponding to 29.3%.

Graph nº7 *- Main characteristic of the headwaters of a river.*



Source: Prepared by the authors.2024

Here, the question about the main characteristic of the headwaters of a river reveals confusion among the students. The majority (46.3%) incorrectly answered that the headwaters are the widest part of the river, which demonstrates a lack of clarity about geographical concepts. Only 24.4% of the students correctly identified the headwaters as the part where the river originates. The confusion between the characteristics of different sections of the river may be a reflection of the way the content is taught, suggesting that students need more practical and visual examples to better understand river geography.

In the fourth question, we sought to know what nomenclature is the structure of a river related to? 17 students answered item a, corresponding to 41.4%, 12 students answered that item b is correct, equivalent to 29.2% and 11 students answered paragraph c, corresponding to 26.8%.

Graph n8 *- Structure of a river.*

Source: Prepared by the authors.2024

In the last paragraph, the question about the nomenclature related to the structure of a river shows that only 29.2% of the students were able to correctly identify the correct nomenclature (paragraph b). The answer indicates that many students (41.4%) chose

subparagraph a, which is probably not the correct one, and 26.8% opted for subparagraph c. This suggests that students may not be familiar with the technical terminology used in Geography, which can hinder their ability to discuss and analyze geographical issues effectively. The lack of knowledge about nomenclature can be an obstacle to more advanced learning in the discipline.

CONCLUSIONS

The theoretical systematization on the study of the profile of rivers in the teaching-learning process of Geography, allowed through the different authors, to make a more judicious approach to the subject, and its impact on the teaching-learning process of Geography, as a model of activities for students under the guidance of the teacher, with the mastery of contents, skills and habits.

The diagnosis The results of the survey carried out with both teachers and students reveal some regularities that can be analyzed to better understand the approach to the theme "profile of rivers" in Geography classes. However, it is crucial to address the identified gaps, both in terms of teaching methodologies and available resources, to promote more engaged and meaningful learning.

Through the identified insufficiencies that characterize the current state, it was possible to outline a set of didactic activities as a proposal that respond to the objective set by the one hand and, on the other hand, can contribute to the improvement of the theme under study in the school.

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