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## BRIEF APPROACH ON TEACHING HYDROGRAPHY IN ELEMENTARY SCHOOL II

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**Abstract:** This work is a possibility for us to think about rivers. The objective of the work is to show that rivers have a history of formation. Rivers are part of the entire systemic dynamics of terrestrial evolution, making up life in the system; as well as the lives of many traditional peoples. In this sense, the work data is constituted through scenes from the Landsat 5 and 8 satellites, and the National Common Curricular Base. As an example, there is a stretch of the Amambaí-MS river, close to the mouth, aiming to analyze the dynamics of evolution aimed at elementary school II. This way, the work demonstrates a way of learning about rivers that is more attractive to students than just memorizing nomenclatures. In this context, the work addressed the dynamics of the channel in the years 2006, 2013 and 2020, identifying the morphological change in the Amambaí river channel, mainly between the years 2013 and 2020, with the abandonment of the meander. From this perspective, the student understands that the dynamics of nature are constant, and, in the case of river dynamics, 14 years is a period in which there is the possibility of changing the channel of a meandering river.

**Keywords:** Watershed; teaching; river; abandoned meander.

## INTRODUCTION

Geomorphology appears at the birthplace of geology, addressing not only geology, but also climatology, hydrology, anthropogenic actions and other approaches (TORRES; SANTANA, 2009). Hydrography is directly linked to the interrelationships of several areas, for example, geology, geography and natural sciences.

River geomorphology is an important area of knowledge that presents high growth in research in this field (HENRIQUES et al., 2018), mainly addressing hydrogeography. This field of study, in addition to being

attractive for researchers, also encourages elementary school students to learn more and more, due to river dynamics being related to several environmental factors; as an example, the physical-biotic characteristics and environmental problems associated with the floodplain of the Araguaia River, addressed by Latrubesse and Stevaux (2006). It is evident that the work of the aforementioned authors is of a scientific nature and at an advanced level, but with the preparation of the teacher it is possible to make it didactic at the level of elementary school II and relate it to the content of the textbook, in addition to bringing the reality of student.

In basic education in both geography and natural sciences, hydrography is present with the nomenclatures: source, downstream, mouth, bed, thalweg, as well as when studying more details at the river basin scale (DIAS, 2019).

However, it is believed that it is not necessary to just teach the nomenclature for the sake of teaching it, but rather to demonstrate the meaning that a river has through the dynamics that are governed by both environmental, climatic and anthropic factors. Thus, consisting of an element of the landscape that has an evolutionary history.

Therefore, this work aims to present an example of river dynamics. We use as an example the dynamics of a stretch of the Amambaí River – close to the mouth, located in Mato Grosso do Sul, in a different way from the textbook, in a visual and temporal approach so that student learning is facilitated and more detailed.

## MATERIALS AND METHODS

To generate the maps, the ArcGIS 10<sup>®</sup> program was used. The maps were generated based on Caraminan, Fragal and Morais (2018). Landsat 5 and 8 satellite scenes were acquired from the United States Geological

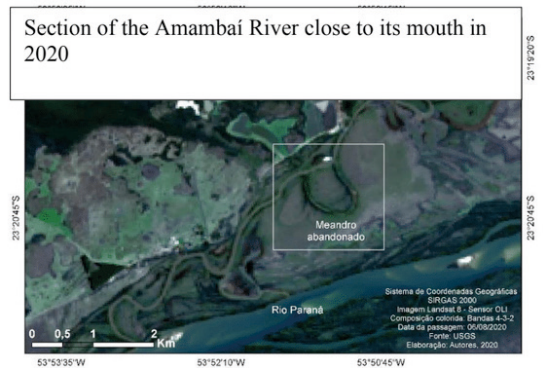
Survey (USGS) repository. Reading to structure the work was not limited to academic works, it also included textbooks as a way of analyzing illustrations on the topic covered.

## RESULTS AND DISCUSSION

Some skills are inserted vertically in classrooms with the current National Common Curricular Base (BNCC). There are many questions in this field. This work thus aims to think together the thematic units of human sciences (geography) and natural sciences.

The content relating to Brazilian hydrography is covered in greater depth in Elementary School II, specifically in the 6th and 8th years for human sciences (geography) and 6th, 7th and 8th years for natural sciences (BRASIL, 2017). At this stage of acquiring knowledge, it is possible to work in greater depth, due to the knowledge gathered by students, mediated by social reality (VYGOTSKY, 1998).

When analyzing the BNCC, it appears that greater attention is directed to large rivers and river basins (BH). At specific times, some materials use the term meandering river to relate the BH. In some cases, only the illustration of the meandering river is pasted, generating doubts in the student, encouraging questions about why the river has many “curves”. It is up to the teacher to mediate knowledge and answer questions about the formation of meanders and even the factors behind meander abandonment. In figure 1, it is possible to visualize a section of the Amambaí River, which is located on the right bank of the Paraná River, in the state of Mato Grosso do Sul, being an example of a meandering river.



**Figure 1:** Location map of the final stretch of the Amambaí River-MS

Prepared by the authors, 2020

In summary, a meandering river is formed by tectonic, climatic, flow, sedimentological conditions, erosion, transport and deposition, and the sinuosity of the meander may present a distinction between stretches, consisting of more or less sinuous (SCHUMM, 1963; SANTOS; LADEIRA; BATEZELLI, 2019).

One approach to presenting the dynamics of meandering rivers in textbooks would be to denote the variation over time, allowing the student to understand that the meanders are not always in the same way (Figure 2).

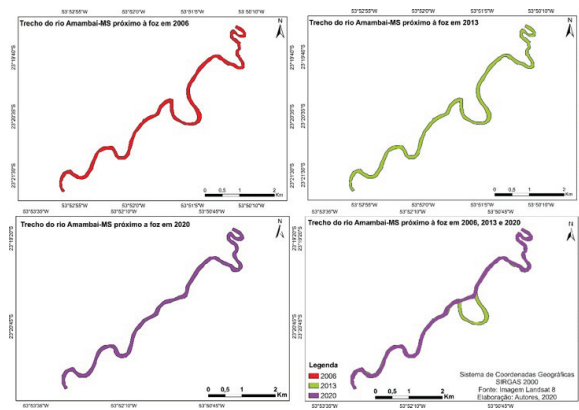
Differences in the river's sinuosity were observed between the years 2006, 2013 and 2020. In the years 2006 and 2013, the Amambaí River showed minimal differences in sinuosity. However, when comparing the years, 2020 showed the biggest differences in the morphology of the channel, with an abandoned meander close to the central part of the section in evidence (Figure 2).

bring students' reality closer to them with past experiences or memories, such as BH analyses, water cycle, land use in a way that overloads rivers with sediments and other content covered in elementary school II.

## FINAL CONSIDERATIONS

Rivers demand more attention in elementary school II, due to the importance of this dynamic element of the landscape, which enables the survival of the rural and urban population and other living beings that make up biodiversity.

This work presented the importance of temporal detail when studying rivers, demonstrating dynamics over time. This approach is a way to demonstrate to students that rivers are dynamic and can undergo changes in channel morphology due to a set of factors. Finally, it must be noted that this way of learning can be more attractive to students than just memorizing nomenclatures. Bear in mind that this is an alternative to thinking about traditional teaching.



**Figure 2:** Maps of the Amambaí river close to its mouth (Paraná river) in the years 2006, 2013 and 2020, showing the meander abandonment

Prepared by the authors, 2020

This illustrative approach in textbooks could increase the learning possibilities for students, since the temporality of water dynamics and river sinuosity is denoted; based on more details than simply presenting the shape and nomenclature of the watercourse.

This approach is necessary because it is directly related to the other content acquired by the students, and it is often possible to

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