



# A JOURNEY INSIDE ATOMIC NUCLEOUS: TEACHING-LEARNING SEQUENCE APPROACHING RADIOACTIVITY



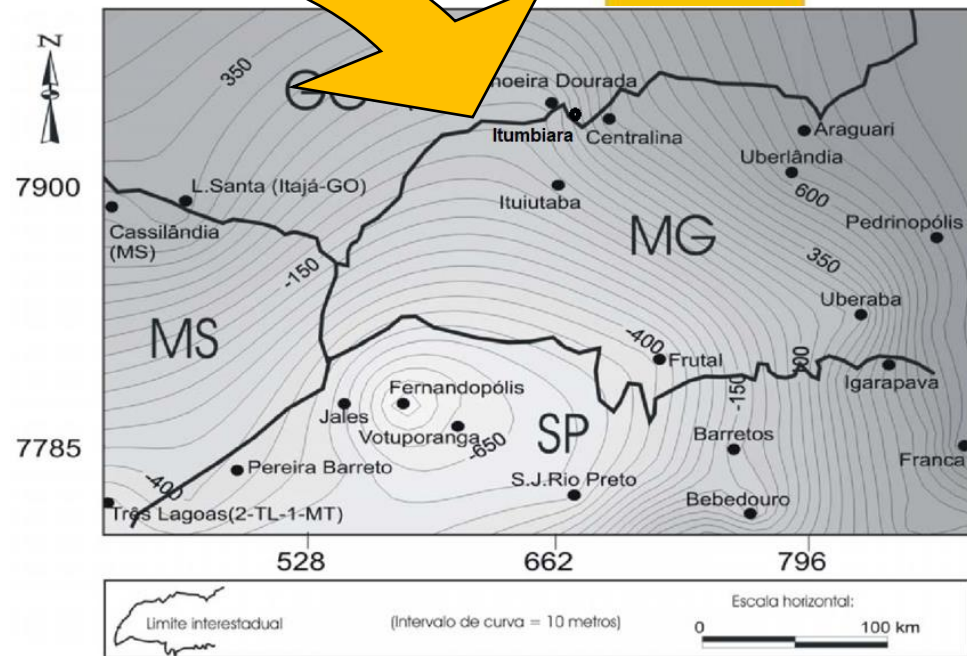
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# Where are we?



# Why Radioactivity?



In the global context, the accident with Cesium-137 was second only to the accident at the Chernobyl nuclear plant in Ukraine in 1986, according to the National Nuclear Energy Commission (CNEN, Brazil). The improper handling of an abandoned radiotherapy device at the facilities where the Goiano Institute of Radiotherapy operated was responsible for an accident that directly and indirectly involved hundreds of people. The opening of the capsule exposed to the environment 19.26g of Cesium-137, which generated 6000 tons of radioactive waste, packed in concrete containers and taken to the definitive repository in the city of Abadia de Goiás, 23 km from Goiânia, where CNEN installed the Center for Nuclear Sciences of the Center-West, which performs the monitoring of radioactive waste and environmental control.

# Contexto





# Goals



# Theoretical Assumptions



## *Teaching Learning Sequences (TLS)*

Didactic constructions

*Enables the design,  
development and  
application of  
teaching sequences  
on specific topics*

## Conceptual Field Theory

Helps to understand  
how the subject  
learns from situations

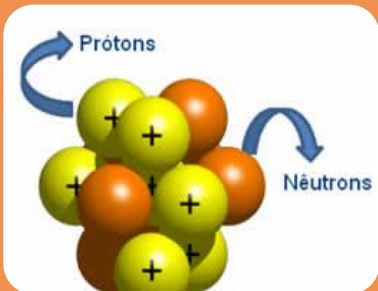
Construction and  
appropriation of  
concepts and  
situations.

# Methods



## 1. Inquiry

- Watching a documentary: nome documentário
- Questions



## 2. Understanding nuclear reactions

- Experimental procedure - situation in which the learner should explain what occurs with the imbalance of protons and neutrons in the nucleus of an atom
- Puzzle-like game to systematize radioactive decays



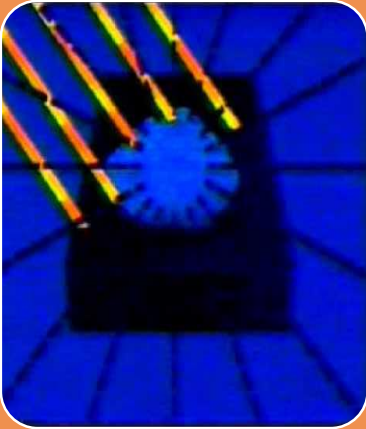
## 3. Historical context of the discovery of Radioactivity

- Reading and discussion of the text "Radioactivity and History of Present Time"





## 4. Importance of scientific knowledge



- Show the role played by physical and chemical knowledge in the development of technology and the complex relationship between science and technology throughout history
- Display of a series with six videos on topics of Radioactivity

## 5. Sequence finale



- Link the videos to the text discussed earlier, by means of five questions.
- Take up the content using the question: "Through all that has been studied, is radioactivity a good girl or villain?"

# Concluding Remarks



The development of TLS can result in "good practices" within the classroom, and working with high school teachers and undergraduates based on their assumptions is quite valid, considering that how teachers learn influences their way of teaching.

The activities carried out with the students allowed us to confirm that students' knowledge about modern physics topics is very limited, restricting too much the understanding of the world in which we live, ensuring the need to include such topics for the discussion of curricular contents.

# References



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**Thank you!**