



Between Fantasy and Reality

THE CONCEPTIONS OF ANTARCTICA IN THE EARLY GRADES OF ELEMENTARY SCHOOL

DR. TÂNIA COSTA
DR. DIOGO FARIA
DRA. ANA RAFAELA FERREIRA
DR. RENATA ALVES



Introduction

- We are Mathematics researchers and teachers in an elementary school at the Federal University of Minas Gerais (UFMG), Brazil.
- Our mission is to train teachers to act in basic education.
- We coordinate an extension program wich aims to promote and spread scientific knowledge to the popularization of science.
- It consists of an innovative informal learning space, an itinerant museum of science and technology: “Museu Ponto UFMG”.



These are the environments of the Museum



The search

- This research presents a result of a didactic sequence placed in a science museum, about the Antarctic continent.
- It aimed to recreate, from students previous conceptions, physical conditions, the weather and living beings that live in the polar region, always considering the human presence in this continent.

- The sequence was developed in Itinerant Museum Ponto UFMG – a science museum built inside of a truck – for over six months, with students between 6 and 7 years old.
- In the hopes of making evident how children build their own conceptions about the Antarctic ecosystems, we have focused our analysis in written activities and drawings made by the students over the months; audiovisual recordings and fieldwork notebook registers.



Antarctica Museum Environment



THEMATIC: ANTARCTICA

- The room “Antarctica” of “Museu Ponto UFMG” attracted students’ interest. Therefore we chose the “Antartica” as a theme for the development of activities, based on a dialog established with Professor Andres Zarankin, author of anthropological and archaeological researches on the arctic territory and curator for the Antarctic biome present on the “biomes room” of the Itinerant Museum Ponto UFMG.
- Besides that, Andrés Zarankin is a coordinator of the "Blank Landscapes: Antarctic Historic Archeology" project, funded by the Brazilian Antarctic Program.



Research Questions

- 1) What are the pre-conceptions about Antarctica that these students in the second year (7 years old) have?
- 2) What is the importance of imagination and creativity in the learning process, as a starting point for working the misconceptions?

Methodology

- The research subjects were eight students of the second year of elementary school.
- Two-hour weekly meetings were held for six months.
- The activities developed were: didactic sequence, visit to the UFMG Itinerant Museum, conversation with the researcher from Antarctica, immersion in an “igloo”, research and reading from various sources (films, books, magazines, sites).

Conversation with the researcher of Antarctica



Immersion in the igloo adapted in the classroom



Activities with magazines



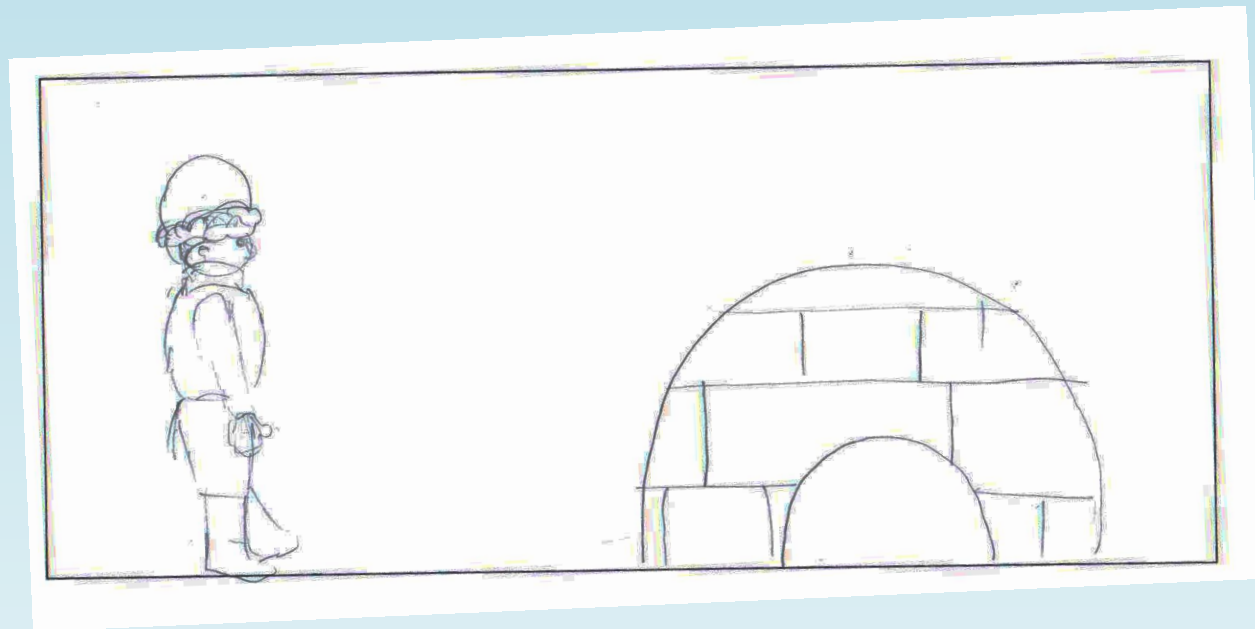
Flag drawing activities



GROUNDS

- The data was analyzed according to Vigotsky's Imaginative Play Theory (2004) and Piaget's Semiotic Function (1973).
- It was noticed that, during the first couple of months, the students' Antarctic conceptions were pervaded by fantastic elements related to imagination and fantasy, expressed as drawings of penguins riding a bicycle, or polar bears with crab claws.

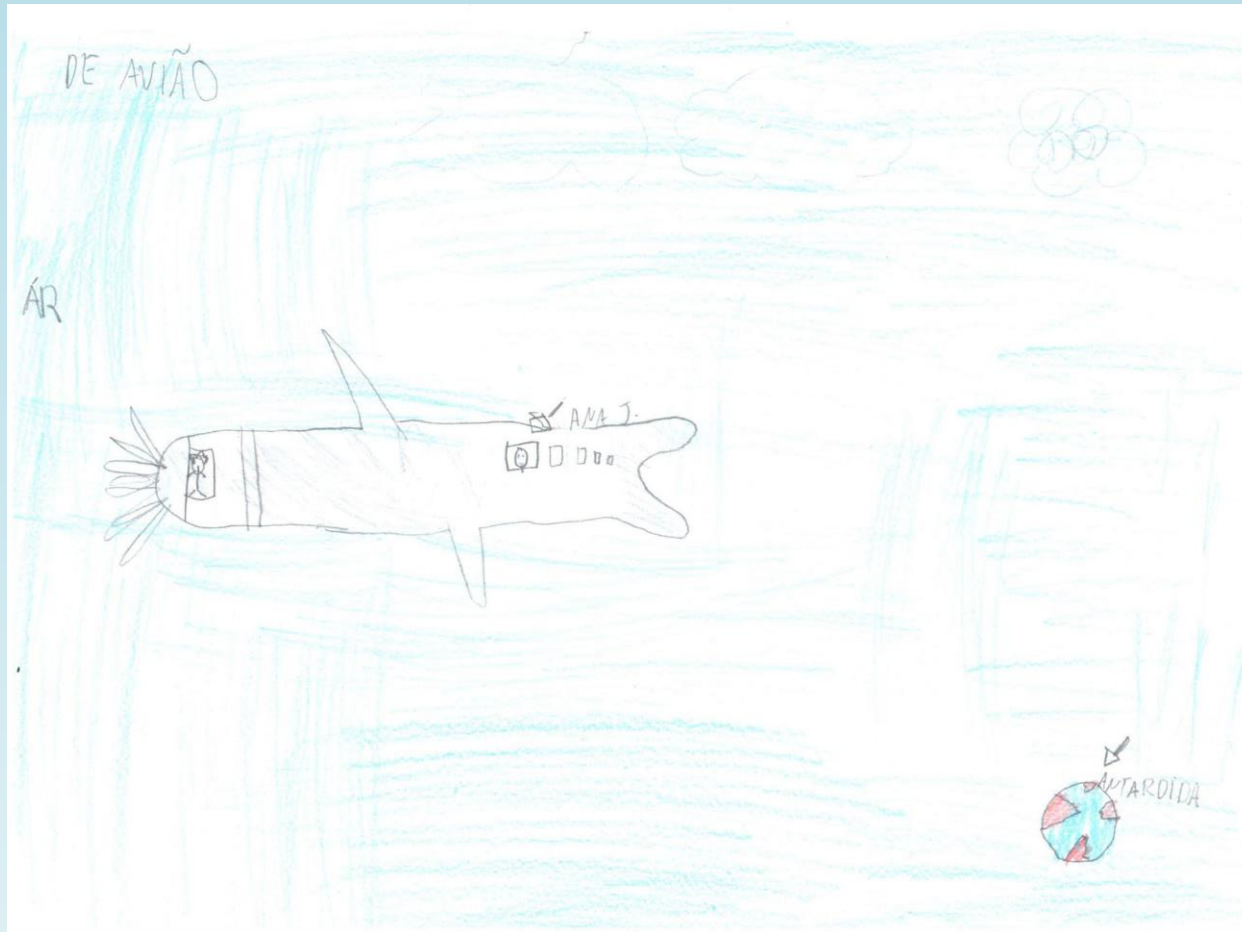
Survey of alternative conceptions about the Antarctica environment and beings living in Antarctica



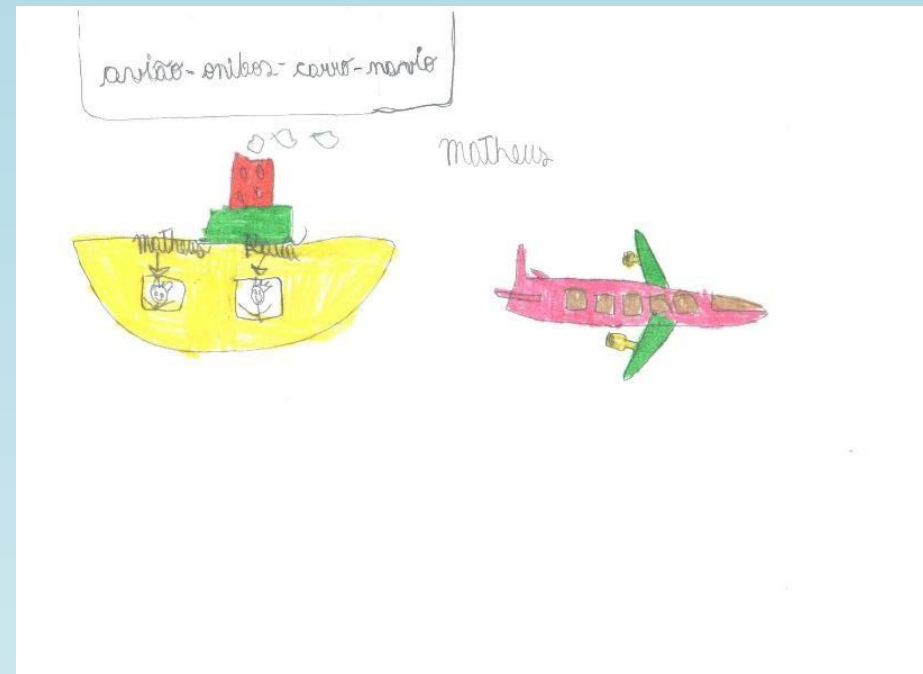
Drawing of a bear with crab arms and squid legs



How do I get to Antarctica?

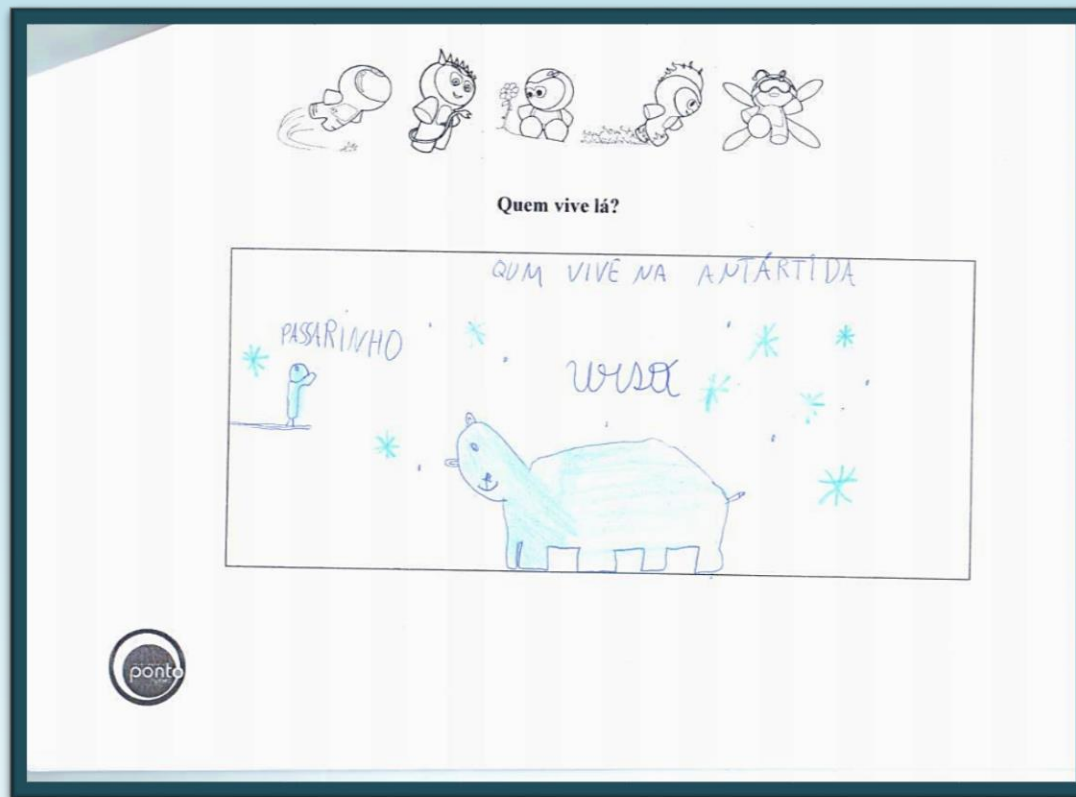


“Buses as a means of transport, plane and even a rocket.”



Materialization of daily elements of childhood

Polar bear associated with soda advertisement



It was also found that some visual elements and some previous experiences from the students with fantastic movie histories (such as: “Ice Age” and “Happy Feet”) merged.



Analyzes

- When we compare the children's drawings made in the first couple of months of the research and those made during the last month, it was evident the transition process from fantasy to reality.

Vamos testar seus conhecimentos sobre a região antártica!

GTD Antártida 1º Ciclo

Você já ouviu falar na Antártida? O que? Quando? Onde?

O que você pensa quando ouve a palavra Antártida?

EU FIZ ISO. FICOU BONITO SIMC JOURNAL CO

URSOS



- This process happened after the students were presented with scientific documentaries about the polar continent, travelling and literature books and group discussions.
- From the semiotic analysis of the last drawings it was noticed new elements, such as a military base, ships and human constructions.

- Children are not limited to remembering experiences already lived. They also re-elaborate new realities, fantasizing things as a reflection of their imaginative activity.
- It was possible to observe how the creative imagination in relation to the different ways of language gives the students a meaningful and constructive learning.
- Stimulating imagination has led to more effective participation of children in activities, in addition to improvements in communication skills, expression and creativity.

- Conclude that the children creative repertory was zoomed, as they appropriate knowledge from the didactic activities.
- The results of this research points out the importance of fantasy and imagination in the process of learning in the early childhood, and a start point to reframe the students' misconceptions and to reinforce the relevance of drawing as an interpretative tool for the children's creative process.

Positive developments

We produced an album of Antarctic figurines

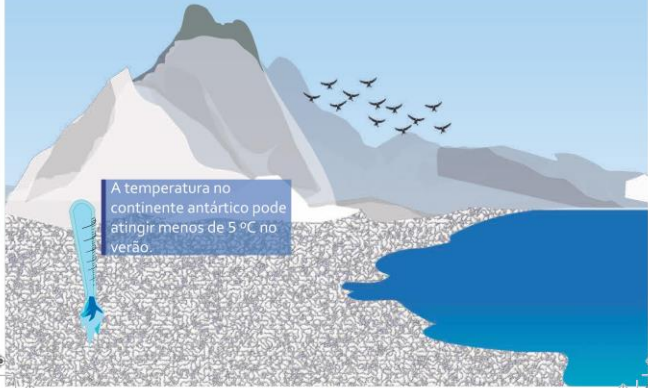


GEOGRAFIA

Cerca de 98% da Antártida é composta por gelo e esse é o maior reservatório de água do planeta. Lá não há apenas gelo e neve, mas também rochas e sedimentos.

Os ventos podem chegar a 237Km/h.

A temperatura no continente antártico pode atingir menos de 5 °C no verão.



FAUNA

Embora pareça um ambiente desabitado e inóspito, o continente antártico está cheio de vida.

O maior animal da Antártida é a Baleia. Apesar de existirem diferentes espécies, a Baleia Jubarte é uma das maiores, podendo medir de 12 a 16 metros de comprimento.

Das espécies que passam tempo em terra, o Elefante Marinho é o maior, sendo que o macho pode medir cerca de 6 metros de comprimento e pesar até 4 toneladas.



FLORA

Além da grande quantidade de espécies animais que moram na Antártida, também existe uma grande diversidade de Flora.

No mar encontramos as algas que, em latim (*algae*), significam "ervas marinhas". Elas crescem submersas na água e constituem um grande e diversificado grupo de espécies autotróficas, ou seja, que produzem a energia necessária ao seu metabolismo através da fotossíntese.

Também encontramos Musgos e Líquens que se desenvolvem, principalmente, nos meses do verão.



OCUPAÇÃO HUMANA

A Antártida é o continente mais radical e foi o último a ser ocupado pelo ser humano, no final do século XVIII e início do século XIX. Nesse período, grupos de caçadores de mamíferos marinhos (especialmente de origem inglesa e norte-americana) exploraram os Shetland do Sul. Esses personagens têm sido deixados de lado pela história oficial e é sobre esses grupos que a pesquisa de arqueologia histórica centra suas análises, ressaltando a sua importância para a compreensão da ocupação humana deste continente.



VESTÍGIOS ARQUEOLÓGICOS

Vestígios Arqueológicos são peças e fragmentos escavados nos sítios e levados para o laboratório para serem estudados. A partir desses materiais, os arqueólogos procuram entender como viviam os lobeiros e foqueiros na Antártida.

Peças de Jogo de Damas

Garrafa

Sapatos

Cravo

Sapato

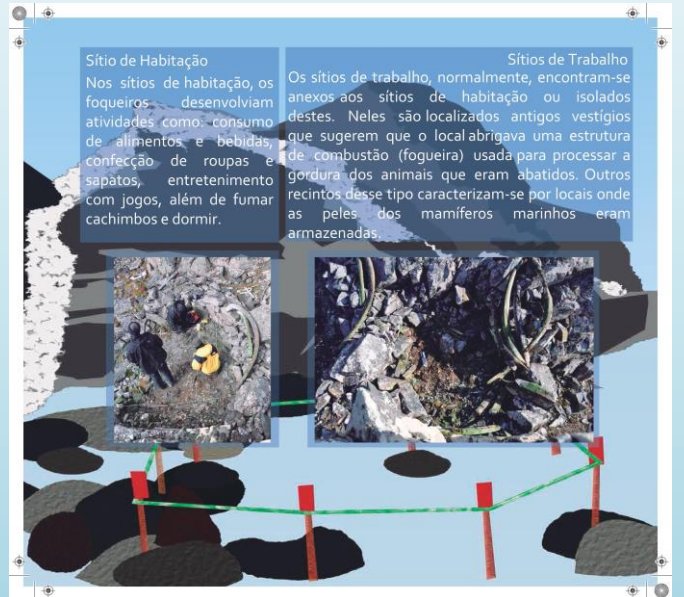


Sítio de Habitação

Nos sítios de habitação, os foqueiros desenvolviam atividades como: consumo de alimentos e bebidas, confecção de roupas e sapatos, entretenimento com jogos, além de fumar cachimbos e dormir.

Sítios de Trabalho

Os sítios de trabalho, normalmente, encontram-se anexos aos sítios de habitação ou isolados destes. Neles são localizados antigos vestígios que sugerem que o local abrigava uma estrutura de combustão (fogueira) usada para processar a gordura dos animais que eram abatidos. Outros recintos desse tipo caracterizam-se por locais onde as peles dos mamíferos marinhos eram armazenadas.



We recreated an archaeological site in Antarctica



Thank you everyone!

Contatos: tmlco8@gmail.com
diogofaria.ufmg@gmail.com
anarafaelfcf@yahoo.com.br
renata.mat@gmail.com

