ESCOLA BÁSICA E SECUNDÁRIA DA MADALENA

Natural Science Lesson Plans

Departamento Curricular de Ciências Físico-Naturais

Topic area: Raising awareness to science

School Year: Year 3 – primary school level

Duration: 45 minutes + 45 minutes + 45 minutes

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Abstract:

Escola Básica e Secundária da Madalena and the Natural Science teachers have been developing a science project in the primary schools in Madalena township.The project "Despertar para a Ciência" intends to promote from a very young age the interest for science and the curiosity about physical, chemical and biological phenomena that are part of these children's daily life. Therefore, and bearing in mind the objectives of the project as well as the objectives of the Erasmus + project "Trail of extinct and active volcanoes, earthquakes across Europe" the teachers dedicated three of these classes to the topic of Volcanism to year 3 children. Due to the fact that we live in a volcanic island with a landscape deeply dominated by the island's main volcano, Pico mountain has been the starting point to develop this topic to these very young children.

Topic: Azores – The Volcano Islands

Conteúdos a abordar:

- Constitution of the volcanic apparatus
- Explosive and effusive volcanoes
- Secondary volcanism

Objectives:

- Describing and characterising the volcanic apparatus;
- Characterising the different type of volcanism;
- Describing and characterising the materials expelled during the different types of eruptions;
- Identifying and characterising the different types of secondary volcanism;
- Identifying the advantages and disadvantages of the volcanic activity.

Specific competences to be developed by the students:

- To relate some landscape features to the different types of volcanism;
- To recognise the huge variety of materials that surround us and that are of volcanic/geological origin.
- To recognise the importance of the volcanic activity.
- To develop the ability to handle materials and chemical reagents.
- To acknowledge the importance of experiments to scientific knowledge.

Materials / Resources:

- Computer and smartboard;
- PowerPoint;
- Protocols for the development of experimental activities;
- Lab material and reagents;
- Worksheet.

Lesson plan and strategies to be implemented:

Class no. 1

- The teachers introduce the topic asking the students the following question: "Why is our island called Pico?"

- The teachers allow and mediate the discussion among the students.

- Afterwards, the teachers promote a moment of reflection and discussion keeping in mind the answers given by the students and conclude that the island is named after the existence of the mountain, which is a volcano.

- After this introductory moment, based on students' beliefs and expectations, the teacher starts the Ppt presentation "The volcanoes in the Azores". (Annex 1)

- The content of the presentation is then explored and a conclusion is drawn: that Pico Island, like all the islands of the Azores Archipelago are of volcanic origin, and that all of them were formed after submarine volcanoes and finally that all of them have reached their current shapes after having gone through different volcanic eruptions.

- The teachers suggests the students build their own small scale volcano model. (Volcano Model – Annex 2)

Class no. 2

Teachers start this class by summarizing the contents of the previous classes. Making clear that the formation of the Azorean Islands is the result of different types of volcanoes and different periods of time.

Getting back to the topic of effusive and explosive eruptions by asking the students the following question: "Is it possible to simulate an effusive eruption and an explosive eruption?"

From this question, the students are told to discuss the materials that they will need to prepare the simulations and start the procedures described in "Explosive and effusive Volcano" (Annex 3)

The students start the experimental activity by the effusive eruption. Considering the simplicity of the procedures, the students will make their own mini eruptions using the volcano models that they made. Only after each student has made his/her eruption will a big eruption be simulated in a larger scale volcano model.

After finishing this first eruption, the students should then start the filling in of the report – "Effusive and Explosive volcano." (Annex 4)

Class no. 3

- Teachers start this class by asking the students about the concepts that were dealt with in previous classes.
- Concluding the experimental activity by performing the explosive eruption (Annex 3 – "Effusive and

Explosive Volcano"). Calling the students' attention to the safety measures that must be kept in mind all through the activity, paying special attention to the use of the lighter and the chemical reagents – this part of the activity should be performed outside due to gas release.

- Students should complete the report about the Explosive eruption activity. ANNEX 4 Report – " Effusive and explosive volcano".
- After having studied the volcanoes, their different eruptions and the products released, the students will be asked about some landscapes features and structures evident in the Azores such as typical fumaroles in São Miguel Island and their relation with those areas.
- After some discussion on the topic, a presentation about Secondary Volcanism is shown. (ANNEX 5)
- The class in concluded with the simulation of a Géiser (ANNEX 6 – Secondary volcanism – Géiser").