

# **Inquiry Scenario Plan Design form for the promotion of Sustainability Citizenship**



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| School Details   |  |
|--|--|
| School Name  | Elementary school of Venda do Pinheiro   |
| City name (Rural/ small town/ middle town/ big city)         | Rural  |
| Number of pupils and teachers                                | 1.085 pupils 190 teachers  |
| How many students and teachers will be involved in the Plan? | at least 140 students and 8 teachers and all others who want to contribute and participate |

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|------------------------------|--|
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### Title:

From the window of my school and beyond!



### Short Description (Max 500 words):

Educating for sustainability, despite decades of insistence on its relevance, has never been as pressing as it is today. It is crucial to instill in students the essence of a way of thinking that opens up the horizons of complex, holistic and unifying knowledge, a systemic way of thinking (Vasconcelos, 2014) that encourages them to develop a scientific literacy (Bybee, 1997) that fosters an ethical awareness (Leopold, 1949) of their position in the grandiosity of the planetary ecosystem (Barcelos, 2007). The development of field activities as a strategy makes sense in a rapidly changing social and environmental context. From this project: "From my school window and beyond! Making the invisible visible!", aims to get students directly involved in the natural, social and cultural context surrounding the school - the natural landscape of Venda do Pinheiro - the Mafra-Lisbon volcanic complex and the River Lizandro, making visible this place that is almost invisible to their eyes, thus recognizing its potential for sustainability. True environmental education takes place in this environment (Almeida, 2007), which allows students to understand the relationship between cognitive skills and emotional skills, developing in them the empathy and respect for all forms of life, necessary for building an environmental ethic (Boff, 2003). Only in this way will they be able to go beyond the limited vision that still persists, of the human being as an external agent to the natural environment, and which has culminated in the devastation we have been witnessing. Through a closer connection with the complexity of nature's systemic and cyclical functioning, students will develop an ecoliteracy (Goleman, 2012) that will allow them to observe, reflect, internalize, learn in a meaningful way, understand, value, disseminate, respect and care, so that in the future they can achieve true planetary citizenship that proactively allows them to reverse current trends.

### Keywords (Up to 5):

environmental education; sustainability; health; systemic thinking; ethics; ecoliteracy

## Information about the Implementation

### Language of the students:

### Age of the students:

9-12  12-15  15-18  18+

### Number of Lessons – Duration (per lesson):

Number of Lessons: 17

Duration per Lesson: 50min

### Is this activity a STEM Activity?

For which subject(s) the activity is usable, is it an interdisciplinary activity?

Science

Physics

Chemistry

Biology

Geosciences

Environmental

Other

Technology

Engineering

Arts

Mathematics

## Information about the Scenario

Curriculum and country:

Link of the current activity to the curriculum:

Country:  Class:  Grade:

Topic:

Curriculum content: The Earth tells its story

Syllabus contents 7th grade: Geological landscapes; Types of rocks; Evolution and characterization of landscapes; Internal and external dynamics of the Earth; Methods of analyzing the geological history of a given region; Fossils that tell the story of the Earth; stratigraphic principles.

### Objectives (Max 100 words):

Description of the learning objectives

**PROBLEM:** We teach about nature only theoretically and we should teach in practice, in nature. To promote outdoor education and the use of natural space for learning as a sustainability factor.

To learn about, explore and value the natural (geological, biological, hidrological), historical and artistic heritage of the Venda do Pinheiro region.

The great challenge is to encourage the entire educational community to get involved with the natural (geological, biological, hidrological), historical and artistic heritage of the school region, towards the development of an active and holistic citizenship, aware of the interdependent interactions between all the components of the pillars of our society: environment, society, economy, science and technology.

Above all, it will enable the development of a link between the educational community and the region's natural environment, meeting objective 4 of the UN Goals for 2015-2030, of quality education.

#### **Example of activitie:**

##### **Specific objectives:**

- To develop Inquiry-type research activities, to be applied in classes of 7th grade students so that they proactively seek, in the light of curricular content, to learn about the geological history of the region surrounding the school, making this invisible history visible.

##### **General objectives:**

- To encourage students to develop personal and social skills through citizenship education and environmental conservation;  
- To develop motivating and innovative educational activities that stimulate critical thinking, creativity and curiosity in students;

- Encourage students to develop a holistic environmental awareness that allows them to develop active citizenship;
- Develop attitudes of persistence, rigor, a taste for research, autonomy, cooperation and respect for others;
- Raising awareness of the need to preserve environmental values in the local and regional context in which the school is located;
- Training sustainably-minded citizens to be aware of environmental vulnerability and unpredictability;
- Internalization of concepts, principles, values and attitudes that promote sustainable living;
- Responsibility for passing on the principles acquired within and outside the school community;
- Raising awareness of the importance of science in interpreting everyday phenomena;
- Stimulating interest in the natural and environmental sciences;
- Promoting the development of practices and attitudes that respect and value the school environment;
- Encourage cooperation, group work, the practice of self-discipline, the pleasure of learning and communicating, raising students' self-esteem;
- Promote trans- and interdisciplinarity;
- Learning to know how to be in nature;
- Strengthening the school's relationship with the surrounding ecosystem towards a sustainable education that values its local natural and cultural heritage;
- Develop healthy communities and citizens through activities that lead to:
  - Understanding and getting to know the place where the educational community is based;
  - Experience the natural world surrounding Venda do Pinheiro;
  - Understand how nature maintains the balance that sustains the biosphere;
  - Recognize the consequences of human actions on ecosystems and how this affects public health in cities;
  - Understand the relationship between the natural landscape and local history, culture and economy.

### Materials (Max 100 words):

Which resources and materials (software, hardware) are needed?

| Software  | Hardware                      |
|---|-------------------------------|
| Presentation software<br>Access to the internet | PC<br>Printer<br>Mobile phone |

### Use of School Infrastructure

How are school facilities and equipment used in your educational scenario?

| School Infrastructure | School Materials   |
|-----------------------|--------------------|
| Class room            | Magnifying glasses |
| Library               | Maps               |
| Auditorium            | Gloves             |

|  |   |
|--|---|
|  | Recipient to collect materials<br>Recycled bags to “plogging” |
|--|---|

### Green competences:

Which green competences are covered by the activity?

|  |  |   |   |
|--|--|---|---|
| Embodying Sustainable Values           | Valuing Sustainability <input checked="" type="checkbox"/> | Supporting Fairness <input checked="" type="checkbox"/> | Promoting Nature <input checked="" type="checkbox"/>      |
| Embracing Complexity in Sustainability | Systems Thinking <input checked="" type="checkbox"/>       | Critical Thinking <input checked="" type="checkbox"/>   | Problem Framing <input type="checkbox"/>                  |
| Envisioning Sustainable Futures        | Futures Literacy <input checked="" type="checkbox"/>       | Adaptability <input type="checkbox"/>                   | Exploratory Thinking <input checked="" type="checkbox"/>  |
| Acting for Sustainability              | Political Agency <input checked="" type="checkbox"/>       | Collective Action <input checked="" type="checkbox"/>   | Individual Initiative <input checked="" type="checkbox"/> |

The definition of the following terms can be found in [GreenComp](#) that is translated in all European Union languages.

### Working with the community

Which external actors will be involved within the framework of the training scenario?

| Organisation Type                     | Organisation Name  |
|---------------------------------------|--|
| NGOs (Non-Governmental Organisations) | LPN – Nature Protection League<br>ISEC - Higher Institute of Education and Science<br>Institute of Education of the University of Lisbon<br>Geology Department of the University of Lisbon<br>Living science |
| PTA (Parent-Teacher Association)      | <b>Yes</b>   |
| Local business                        | -  |
| Other (please explain)                | - Mafra City Council<br>- Venda do Pinheiro Parish Council and Milharado Parish Council  |

## How will the above-selected institutions help in the educational scenario?

Partnerships with geology, geography and environmental science departments to develop joint research projects focused on the geology of the region.

Organizing courses, lectures and workshops on geology for students and the community in general. – ISEC; LPN; Geology Department of the University of Lisbon; Living science

Creating ongoing training programs for teachers and educators on geological topics.

Providing teaching materials such as geological maps, books and geological modeling software.

Funding and organizing fieldwork to collect data and samples.

Promoting conservation projects for important geological sites.

Involving the local community in research and conservation projects.

Promoting citizen science programs.

## Detailed activity description

Fill in the table below according to the hours of the training activity and its content (fill in the table with the subjects contained in your training scenario).

The educational scenario should follow the **5E didactic model** of inquiry-based learning.

| Number and name of courses                    | Course content   | Teaching hours |
|---|--|----------------|
| <b>Lesson 1 – (ENGADGE)</b>                   | The landscape and environmental structure of Venda do Pinheiro<br>Workshop in collaboration with scientists from the Higher Institute of Education and Science and the Nature Protection League.   | 50 min         |
| <b>Lesson 2 - (ENGAGE/EXPLORE) (HANDS ON)</b> | Outdoor learning lesson, in the Intermodal Park with visibility to the landscape under study.<br><br>Objectives:<br>a) Observe the landscape in front of them carefully and attentively.<br>b) To identify the main landforms in front of them.<br>c) To identify other relevant aspects of the landscape.<br>d) Draw a sketch of the region's landscape, including the main landforms.<br>e) Legend its constituents: landforms; land subsystems present; other relevant aspects. | 120 min        |
| <b>Lesson 3 - (EXPLORE) (HANDS ON)</b>        | Evolution of the Venda do Pinheiro landscape<br>Outdoor Learning class, in the Intermodal Park with visibility to the landscape under study.<br><br>Objectives:<br>a) To conclude the objectives of the previous lesson.   | 90 min         |

|  |        |
|--|--------|
| <p>b) Is this landscape the same as it was in the past? Explain why.</p> <p>c) Is it a dynamic landscape (constantly changing) or a static one (never changing)? Justify this.</p> <p>d) Identify the main agents shaping/modifying the landscape over time.</p>   |        |
| <p><b>Lesson 4 - (EXPLORE/EXPLAIN)</b> Agents shaping the Venda do Pinheiro landscape</p> <p>Reflection on the evolutionary history of the landscape under study.</p> <p>Objectives:</p> <p>a) To conclude the objectives of the previous lesson.</p> <p>b) To reflect on the agents that change the landscape over time.</p> <p>c) To relate this change to the agents that shape the Earth's internal dynamics.</p> <p>d) Relate this change to the agents that shape the Earth's external dynamics.</p> <p>e) Considering the main relief structures present in the floodplain landscape, try to imagine what this landscape would have looked like in the past.</p> <p>f) Propose methods for studying the evolutionary history of a landscape over time. Apply it to the case of Venda do Pinheiro. What could be done?</p> | 90 min |
| <p><b>Class 5 - (EXPLORE) (HANDS ON)</b> Methods for studying and analysing the evolutionary history of a geological landscape</p> <p>Study tour of the Venda do Pinheiro north bank landscapes with the support of scientists of Geology Department of the University of Lisbon.</p> <p>Objectives:</p> <p>a) Observation, analysis and collection of elements relevant to the study of the evolutionary history of the Venda do Pinheiro: rocks; soil; fossils; other relevant elements.</p>   | 50 min |
| <p><b>Class 6 - (EXPLORE) (HANDS ON)</b> Methods of studying and analysing the evolutionary history of a geological landscape</p> <p>Study visit to the landscapes of Venda do Pinheiro south bank.</p> <p>Objectives:</p> <p>a) Observation, analysis and collection of elements relevant to the study of the evolutionary history of the Venda do Pinheiro: rocks; soil; fossils; other relevant elements.</p>   | 50 min |
| <p><b>Lesson 7 - (EXPAND) (HANDS ON)</b> Rocks and fossils as ways of telling the evolutionary story of a region.</p> <p>Experimental activity observing and analysing the materials collected on the field trips.</p> <p>Objectives:</p> <p>a) To observe and characterize the different types of rocks and fossils collected in the region north and south of Venda do Pinheiro.</p> <p>b) Considering the different types of rocks collected and the different types of geological landscapes you have learned about. Identify which type of geological landscape Venda do Pinheiro belongs to.</p>   | 50 min |



|  |        |
|--|--------|
| <p>c) Taking into account the formation of the rocks in the floodplain and the main relief structures observed, try to sketch what the landscape would have looked like in the past and how it has evolved to the present day.</p>   |        |
| <p><b>Lesson 7 – (EXPAND) (HANDS ON)</b> The geological map as a tool for analysing the evolutionary history of a region</p> <p>Practical activity for understanding and analysing the content of the geological chart.</p> <p>Objectives:</p> <p>a) Observation and analysis of the different elements present on the chart.</p> <p>b) To analyse the information contained in the different strata in terms of: rock type; fossil content; age.</p> <p>c) Identifying the geological principles applied.</p> <p>d) Taking into account the information contained in the different strata, try to reflect on the landscape of the region over the millions of years that these strata have been formed.</p> | 90 min |
| <p><b>(EXPAND)</b> Written/cartoon representation of the evolutionary history of the geological landscape of Venda do Pinheiro</p> <p>Final objective: Outline of geological history over time.</p>  |        |

### Evaluation (if any):

Please write how students are going to be evaluated

#### (EVALUATE)

##### Formative

- Direct observation: observing students' participation, their curiosity, their involvement in discussions and their interaction and collaboration among peers.
- Field diaries: evaluate the field diaries.
- Discussion or Debate: assessing the students' ability to argue, respect and defend different points of view on the basic theme of the activity.

##### Summative

- Report: ask the students to write a report on their findings which can be presented orally or as a poster.
- Ask some questions about the visit in a written test, where they can demonstrate the knowledge acquired in the activity and their understanding of the key concepts.
- Self-evaluation and self-assessment: students should reflect on the knowledge they have acquired and how they have performed during the activity. They should also give constructive feedback to their classmates.

**Note:** the teacher should also give individualized constructive feedback, highlighting strengths and aspects for improvement.

### References (if any)

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### Sustainable Contact Details:

|       |  |
|-------|--|
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### Annex

Feel free to add any more information and material you have, indicatively photos from the activity, constructions needed or any handbook that may be available online.

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