**O3.2 Lesson Plan –** A River Canyon

**Age group/class:** 14-15 years old/ Year 9

**Lesson title:** A River Canyon

**School Disciplines:** Biology/Geology

**Key concepts:** Abiotic factors, Ecosystems, Ecological succession

**Aims:**

This VR resource aims to provide students access to the Douro river canyon, part of the Douro International Natural Park (PNDI), located in NE Portugal. The travel along the river is an outdoor class covering different aspects of biology, geology and geography. In particular, this lesson plan has the following learning objectives:

- Describe the influence of abiotic factors on ecosystems.  
- Identify types of biotic relationships.  
- Understand the stages of an ecological succession.  
- Identify disturbances of ecosystems.

- Understand the need for the preservation of bio and geodiversity.

**Skills developed**: observation, description, analysis, research and collaboration.

**Materials/Equipment needed**:

- VR glasses;

- VR video/link: <https://eloquent-ramanujan-887aa5.netlify.app/douroriver.html>

**Lesson plan:**

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| **Stages** | **Description of activity** | **Time** |
| **Preparation before the lesson** | Introducing students to VR glasses if this is their first VR experience.  Proper and safe use of VR glasses.  Potential adverse effects of VR glasses.  Students should be given the choice to opt out of using VR. |  |
| **Introduction** | The location of the Douro International Natural Park is provided with a short introduction to the study visit to the Douro river canyon. The main objectives of the class are discussed and key concepts are revised (the influence of abiotic factors on ecosystems; types of biotic relationships, stages of an ecological succession, disturbances of ecosystems; the preservation of bio and geodiversity). | 15 min |
| **Guided**  **Immersive**  **Experience** | The students put on the VR headsets and explore the video at their own pace.  Turn the headsets off and bring students back into the classroom.  Students, organized in groups, write a report on the following aspects related to the study visit:  - The influence of light, water, soil, temperature, or wind on ecosystems.  - Identify types of biotic relationships (lichens as symbiotic associations).  - Describe the stages of an ecological succession (lichens as pioneer species).  - Equilibrium disturbances of ecosystems (lichens as bioindicators).  - Preservation of biodiversity and geodiversity (typology of protected areas). | 3 min.  15 min. |
| **Follow up** | The groups present and discuss their results, monitored by the teacher. | 15 min. |
| **Formative assessment** | Teacher collects the reports and correct them, if necessary. |  |