

Landslides – Lesson Plans from Buzău Land UNESCO Global Geopark

LESSON ONE

Classroom Activity: Exploring Landslides in Buzău Land

Introduction:

While field explorations are ideal, the classroom can become an interactive and engaging place to discover complex natural phenomena. The proposed activity brings to attention the landslides in Buzău Land UNESCO Geopark, offering a combination of theoretical and practical learning.

Objectives (extensive and detailed):

1. **Understanding the concept:** Students will learn what landslides are, how they form, and why they are important.
2. **Identifying the types of landslides:** Through images and models, students will explore the variety of shapes and conditions of landslide formation.
3. **Risk assessment:** Students will analyze the impact of these phenomena on the environment and human communities.
4. **Skill development:** Through observation, analysis, and expression, students will improve their teamwork and communication skills.
5. **Awareness:** They will understand the importance of protecting the environment to prevent and reduce the effects of landslides.

Required materials:

1. **Maps and images:**
 - Detailed map of the area, in this case Buzău Land (physical or digitally projected).
 - Photos of different types of landslides, from Buzău or other places in the world.
2. **3D models (optional):**
 - Plasticine, sand, earth or other materials for simulating slips.
3. **Videos:**
 - Short, explanatory videos illustrating the landslide process and its effects.
4. **Creative materials:**
 - Paper, pencils, markers, scissors, glue for making posters.
5. **PowerPoint presentation:**

- A well-organized structure with images, graphs and information about the phenomenon.

Detailed activities:

1. PowerPoint Presentation:

- **Duration:** 10-15 minutes.
- **Structure:**
 - Introduction to the area (in this case, Buzău Land Geopark): location, geological specificity and uniqueness.
 - Explanation: What are landslides? Natural factors (rainfall, volcanic eruptions) and human factors (deforestation, construction).
 - Illustrative examples: Case studies from the Geopark and other known regions, with famous examples from the world (Alps, etc).

Tip: Use animations and videos to show how a landslide occurs.

2. Image Analysis:

- **Duration:** 20 minutes.
- **Instructions:**
 - Divide the class into groups of 4-5 students.
 - Share sets of landslide images to each group.
 - Students should describe the images using guiding questions, such as:
 - What do you notice in the image?
 - What do you think are the causes of the landslides?
 - What consequences could it have on people and nature?

Result: Each group presents the conclusions to their peers.

3. Building a model:

- **Duration:** 30-40 minutes.
- **Description:**
 - Provide students with materials such as sand, plasticine, and water to create a pattern of the relief.
 - Simulate a landslide by overwetting the base layer; use toothpicks to simulate the effect of trees (roots, etc).
 - Discuss: How does the slope, the rock type and its properties, or the absence of vegetation influence the phenomenon?

Impact: Students will dynamically understand the process and the factors involved.

4. Role-playing:

- **Duration:** 20 minutes.
- **Description:**

- Each group will play a role in an emergency situation:
 - Local authorities coordinating the evacuation.
 - Journalists documenting the event.
 - Residents defending their properties.
- The goal is to learn how to collaborate and make quick decisions.

5. Creative project:

- **Duration:** 40 minutes (can be extended at home).
- **Description:**
 - Students will create posters or presentations about the causes and measures to prevent landslides.
 - These will be exhibited in class or used in a public presentation to the community.

Debriefing:

- **Discussion:** What was the most interesting or surprising discovery? What did they learn?
- **Clarifications:** Answer questions and highlight essential concepts.
- **Evaluation:** Each student can fill in a short questionnaire or express, in a short paragraph, what they understood.

Continuation of the activity:

1. Organizing a fieldtrip to the area (Buzău Land Geopark, in this case) to see real landslides.
2. Inviting a specialist (geologist) to provide further explanations and answer students' questions.

Age adaptation:

- **Under 5th grade:** Focus on images, videos, and creative activities (drawings).
- **5th grade +:** Integration of more complex scientific concepts and real case studies.

Interdisciplinary connections:

1. **Earth Sciences:** The study of the landscape and natural processes.
2. **Physics:** Analysis of the forces that cause the slips and slides.
3. **Biology:** The importance of vegetation in maintaining soil and rock stability.
4. **Civic education:** Social impact and prevention measures.

Assessment:

- Notice student engagement.
- Analyse the final products: models, posters or presentations.
- Apply quizzes or short tests to check the level of understanding.

LESSON TWO

Outdoor activity: Landslides in Buzău Land

Introduction

Buzău Land Geopark, with its unique landscapes and impressive geological phenomena, offers a perfect setting for activities in nature. Landslides, although they may seem destructive, are a fascinating natural phenomenon that can be studied and understood in an educational context. This activity aims to connect students with nature and give them the opportunity to better understand natural phenomena through direct observation, analysis and collaboration.

Activity title: Earth Explorers: Discovering landslides

Age: 12-16 years old (adaptable according to the level of knowledge and interest of the participants)

Objectives:

1. **Understanding landslides:** Participants will learn about the natural and human causes that lead to landslides.
 - Factors such as heavy rainfall, deforestation, soil instability, earthquakes and human activity (construction, roads) will be discussed.
2. **Observation and description of landslides:** Participants will be guided to identify the visible signs of landslides (cracks, displacements, destroyed vegetation).
 - They will learn to differentiate between the types of landslides: rotary, translational, flowing or avalanche type.
3. **Risk assessment:** Participants will analyse the consequences of landslides on the environment and local communities.
 - They will discuss the social, economic and environmental impact.
4. **Skill development:** Through hands-on activities, participants will practice observation, data analysis, teamwork, and expressing ideas.
5. **Environmental Awareness:** Participants will learn how protecting the environment can reduce the risks of landslides and other destructive natural phenomena.

Resources:

1. **Detailed map of the area:** This will include details of known areas at risk of landslides. Participants will be guided to interpret the map to identify risk areas.
2. **Cameras:** The students will visually document the studied areas, which will allow further analysis and the creation of a photo album of the activity.
3. **Informational materials:** Posters and leaflets will contain essential information about landslides, providing a starting point for discussions.

4. **Notebooks and pencils:** Participants will write down observations, sketch terrain profiles, and learn to synthesize information.
5. **Personal protective equipment:** Boots, raincoats, and other equipment are essential for safety.

Introduction (in the field):

1. **Opening questions:**
 - **What do you know about landslides?** Participants will be invited to express their initial knowledge.
 - **Have you ever seen a landslide?** This question will encourage discussions about personal experiences.
2. **Explanation:**
 - A presentation on landslides will be given, using local examples.
 - Key terms such as erosion, soil instability and natural and anthropogenic triggers will be explained.
3. **Division into teams:**
 - Participants will be organized into small teams to facilitate collaboration and exchange of ideas.
4. **Training:**
 - Clear safety rules will be presented (e.g., avoiding unstable areas, proper use of equipment).
 - Each team will receive a kit with the necessary resources (map, notebook, pencils).

Activities that can be carried out:

1. **Direct observation:**
 - a. The teams will explore an area affected by landslides. The guide will point out clear signs, such as soil creeps, uprooted or tilted vegetation, hummocky terrain or displaced rocks.
 - b. Participants will learn to 'read' the terrain, asking questions about what they observe.
2. **Sample collection:**
 - a. Small samples of soil, rocks and vegetation will be collected, respecting the rules of environmental protection. These samples will be analysed later to learn about the composition of the soil and the prevailing rock types.
3. **Making sketches:**
 - a. Students will make sketches of the landslide profile, including elements such as soil cover, rock types, structures, vegetation.
 - b. This exercise will develop observation and graphic representation skills.
4. **Photos:**
 - a. The teams will take field photos to accompany their notes. These images will be used for subsequent reports or presentations.
5. **Role-playing:**
 - a. Participants will simulate an emergency situation caused by a landslide.
 - b. Each team will have a specific role, such as local authorities, geologists, journalists or community members.

- c. The goal is to find solutions and communicate effectively to manage the situation.

Debriefing:

1. Team discussions:

- Each team will present the observations made during the activities and the conclusions reached.
- Sketches, photos and notes will be compared to notice differences and similarities.

2. General discussion:

- The instructor will answer questions and clarify concepts that are more difficult to understand.
- Participants will reflect on the importance of the activity and the link between landslides and human impact on the environment.

3. Assessment:

- Students will be invited to share what they liked the most, what they learned and what they would change for the future.
- They will fill out a questionnaire or write a short essay about their experience.

Important aspects:

1. Safety:

- It is crucial that all activities are carried out in safe areas, under the supervision of a qualified adult.
- Participants must wear appropriate equipment (boots, waterproof clothing).

2. Age adaptation:

- For younger groups, explanations can be simpler and focus on hands-on activities.
- For older students, more advanced concepts such as risk analysis or landslide modeling can be included.

3. Interdisciplinarity:

- The activity can integrate geology, biology, physics and even the arts (through drawing or photography).

4. Environmental protection:

- Students will be encouraged to leave the visited area clean and respect nature.

Extensions:

1. Realization of a project:

- Students can create models of landslides or posters highlighting their causes and effects.
- Exhibitions can be organized with the materials made.

2. Inviting a specialist:

- A geologist can provide additional information and answer questions from participants.

3. Video documentaries:

- A short documentary about landslides can be created, using the images and information collected during the activity, and potentially enhanced with videos made with smartphones (Instagram reel style, for example).