Caves & Caverns

Exploring the Wonders of Caves and Caverns in a Sustainable Way

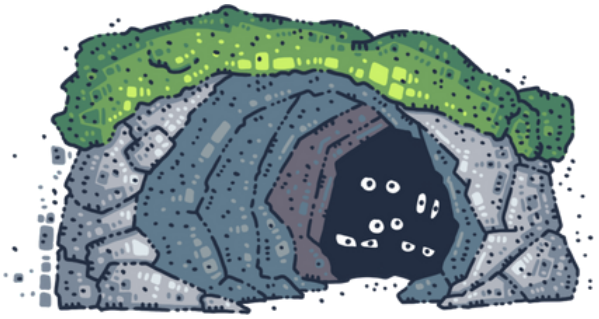
Keywords:

caves, caverns, ecology, conservation, sustainable tourism, environment, biodiversity

Target group:

primary school pupils (ages 6-11)

Objectives:



This activity introduces pupils to the underground world of caves and caverns, highlighting their ecological importance, biodiversity, and the need for protection.
Through discussion, role-play, and model construction, pupils will discover how caves function as sensitive habitats, water sources, and scientific environments. They will also explore the concept of sustainable tourism and how human visits can be managed to avoid damaging these natural treasures.

General Guideline on Time Allocation:

The duration needed to carry out this activity may vary depending on the specific group of children. Teachers are encouraged to adapt the implementation according to the needs, interests, and dynamics of the group.

In the preparatory phase, teachers may use a variety of activities to introduce and contextualize the chosen topic. These can include discussions, videos, drawings, storytelling, or even a field trip, depending on the age and background knowledge of the children.

The main construction phase, during which children plan and build their urban element using LEGO bricks, should typically not exceed 45 to 60 minutes. However, this phase often stimulates further curiosity and questions among the children, potentially leading to extended engagement or follow-up activities. For more detailed instructions and pedagogical support on how to implement activities of INNO–kids project, please download the Teacher's Methodological Guide.

Materials and Resources Needed:

- Cardboard boxes, or shoe boxes (to create the cave structure)
- Brown and grey paper, markers, scissors, glue, string, and tape (to simulate rock walls, and pathways)
- Small stones, twigs, moss, dry leaves
- Bottle caps, egg cartons, toilet rolls (to build stalactites, or cave animals)
- Lego bricks (various sizes and colors) or other building blocks
- Small battery-powered lights or reflective paper (optional – to simulate cave lighting)
- Pictures or videos of real caves and caverns

Note: Encourage pupils to use their imagination and repurpose available materials in creative and functional ways. If LEGO bricks are not available, pupils may draw, cut, and construct using paper and craft supplies.

Introduction:

Begin by asking pupils what they know about caves. Have they ever visited one? What did they see, hear, or feel inside? Explain that caves and caverns are more than just dark, mysterious places — they are ancient ecosystems filled with unique life forms, flowing water, and fragile rock formations. Use photos or a short video to show how different caves look around the world. Then introduce the idea that while caves can be exciting to explore, they are also very sensitive to human activity. Ask pupils: “What could happen if too many people visit a cave without care?”

Procedure:

Preparation:

Begin with a class discussion about what makes caves special — how they form, what lives inside them, and why they are important. Introduce key features such as stalactites and stalagmites, cave-dwelling animals, underground rivers, and fossils. Emphasise that caves are fragile ecosystems where even small changes (like touching formations) can cause damage.

Construction:

Divide pupils into small groups. Each group will create a cave model using boxes or craft materials. They should:

- Design the shape and layers of the cave (e.g. tunnels, chambers, rock formations)
- Add realistic elements like rocks, underground water, or cave animals
- Include features for safe and respectful visits — paths, signs, quiet zones, or special lighting
- Show how the cave is protected from damage (e.g. no-touch zones, limits on visitor numbers)

Details:
As groups work, support pupils in refining their models by asking guiding questions:

- How will people learn about the cave and its importance?
- What would make visitors feel excited but also respectful?
- How is your cave protected from damage?

Encourage them to include small but thoughtful features — like eco-friendly lights, barriers around fragile formations, or posters explaining cave rules.

Stories:
Invite pupils to imagine a journey through their cave. Who is visiting? A young explorer? A scientist? A family on holiday? Encourage them to tell a story about what the visitor experiences — what they see, hear, and learn. The story could include exciting discoveries, peaceful moments in echoing chambers, or even from the perspective of a cave-dwelling animal, sharing how life inside the cave changes when humans arrive respectfully or carelessly.

Presentation:
Invite each group to present their cave model and the story they created. Pupils should explain the key features of their cave — such as its layout, rock formations, underground life, and visitor paths — and highlight the sustainable solutions they included to protect the ecosystem. Encourage them to speak as if they are tour guides, leading the class on a “visit” through the cave. Stories can be integrated into the presentation or performed as a short skit. After each group presents, invite the class to ask questions, and share positive feedback.

Tips:

- Use images, videos, or virtual cave tours to spark ideas.
- Use questions like “How does your cave stay safe during busy tourist season?” or “What would a bat need to feel undisturbed?” to guide design decisions.
- Praise both creative ideas and simple, thoughtful touches that show real care for nature.

Additional Considerations:

Differentiation:

Provide additional support or simplified instructions for pupils who may require extra assistance. For advanced pupils, offer extension tasks such as researching further sustainable practices or designing more complex models.

Assessment:

Assess pupils based on their participation and engagement during discussions and hands-on activities. Evaluate the creativity, effort, collaboration, depth of understanding demonstrated in their models, critical thinking, ability to provide constructive feedback and presentation skills.

Extension Activities:

- Arrange a virtual or in-person visit to a real cave, nature reserve, or science centre.
- Invite a geologist or conservationist to speak about caves, fossils, or underground ecosystems.
- Start a class project about hidden habitats (e.g. caves, burrows, tunnels) and how they are affected by climate change.

Curriculum Connections:

This activity integrates:
Science *(geology, ecology, environmental science)*
Social studies *(conservation, responsible tourism, natural heritage)*
Art *(design, creativity, construction)*
Language *(oral communication, storytelling, and listening skills)*

SDG Connections:

- **SDG 12:** Responsible Consumption and Production – Pupils reflect on human impact and how to enjoy nature responsibly.
- **SDG 13:** Climate Action – Pupils explore how sensitive underground ecosystems are affected by environmental changes.
- **SDG 14:** Life Below Water – Caves connected to coastal or freshwater systems are discussed as habitats in need of care.
- **SDG 15:** Life on Land – The activity promotes protection of underground biodiversity and fragile landscapes.

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