Streams and Creeks

Understanding Water Systems, Erosion, and Habitats

Keywords:

stream, creek, watershed, erosion, sedimentation, water cycle, habitat, biodiversity

Target group:

primary school pupils (ages 6-11)

Objectives:

This activity introduces pupils to the natural dynamics of streams and creeks and their role within larger water systems. Through building and testing models, they will explore the formation of watersheds, the processes of erosion and sedimentation, and how these water systems support rich biodiversity. Pupils will develop problem-solving and engineering skills as they simulate water flow, observe real-world processes, and experiment with solutions like dams or purification systems.

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:

- LEGO bricks and baseplates
- Water containers: small plastic tubs or trays
- Natural materials: sand, soil, gravel, small stones
- Measuring cups, pipettes or squeeze bottles (to simulate rainfall)
- Paper towels, cloths, and trays for water control and cleanup
- Optional: small plants, moss, toy animals, fish figures
- Paper, pencils, and markers for sketching and taking notes
- Visuals: videos or photos of real streams, creeks, erosion examples
- Optional: coffee filters, or cotton for water purification experiments

Note: Ensure safe use of water indoors — prepare waterproof surfaces or do the activity outdoors if weather allows. If LEGO is not available, pupils may build topography using natural or craft materials (e.g. clay, cardboard ridges, recycled items).

Introduction:

Begin by asking pupils: “What is the difference between a stream and a creek?” “Where does the water come from and where does it go?”
Show photos or short videos of real-life creeks and streams. Highlight their role in nature — shaping the landscape, carrying water across distances, and supporting both land and aquatic life. Explain that these flowing waters are part of larger systems called watersheds.
Introduce the key concepts:

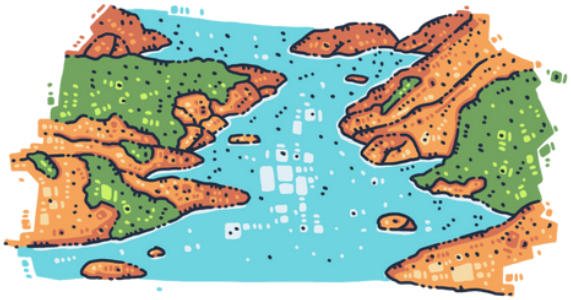
- Erosion – when water wears away soil and rocks
- Sedimentation – when the materials carried by water settle elsewhere
- Habitats – how different animals and plants rely on these water systems

Procedure:

Preparation

Divide pupils into small groups and explain that they will be building their own watershed landscape using LEGO and natural materials. Begin with planning:

- Each group sketches a landform model that includes hills, lowlands, and a winding stream or creek
- Mark key zones like the source (e.g. mountain), stream bed, floodplain, and collection point
- Pupils label where they expect erosion to occur and where sediment might settle



Construction

Each group begins building their watershed model on a tray or waterproof base. Using LEGO bricks, soil, sand, and small stones, they shape:

- High ground: hills or mountains where water will start
- Low ground: valleys, creek beds, and flat areas for pooling
- Water channel: a stream or creek path made from smooth bricks or grooves

Once the terrain is ready, pupils simulate rainfall by carefully pouring or dripping water from the top using cups or squeeze bottles. As the water flows, they observe:

- Where erosion starts (displacement of soil or sand)
- Where sediment settles
- How fast or slow the water moves

Details

As pupils refine their models, encourage them to add:

- Erosion control features – like plant roots, rocks, or mini “terraces”
- Habitats – small shelters, logs, or wetland zones for amphibians and insects
- Structures – simple bridges, viewing areas, or paths along the stream
- Water-related features – small waterfalls, side pools, or filtration zones

Stories

Invite each group to invent a short story set in their stream or creek environment. The story should include a main character (animal, person, or natural element like a rock or drop of water) and describe an event that takes place in their model. Stories can be spoken, written, or drawn as comics — whatever suits the age and skills of the pupils.

Presentation

Each group presents their stream or creek model to the class. During the presentation, they should explain:

- The landscape they created and how water flows through it
- What they observed during the erosion and sedimentation simulation
- What habitats they included and how they support different species
- Any additional experiments (e.g. dam design or flood test) they carried out

Encourage classmates to ask questions or give positive feedback:

“What did you like about this model?”

“What surprised you during your test?”

“What would you do differently next time?”

Tips:

- Support creativity and resilience: if something collapses or floods, that's part of learning. Real streams also change over time!
- Reinforce the idea that water shapes landscapes — and that humans can help protect, restore, or damage these systems.

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:

- Visit a nearby stream or invite a local water management expert or environmentalist to discuss local creeks or restoration efforts.
- Conduct a water quality experiment using natural filtration materials.

Curriculum Connections:

This activity integrates:

Science *(erosion, sedimentation, ecosystems, habitats, water cycle)*
Geography *(landforms, watersheds, impact of natural processes on the landscape)*
Mathematics *(measurement, estimation, flow rate)*
Art *(model-making, visual representation of systems and stories)*
Language *(storytelling, oral presentation)*
Environmental Studies *(understanding human impact on natural water systems)*

SDG Connections:

- **SDG 6:** Clean Water and Sanitation – Pupils understand water systems and how human activity affects water quality
- **SDG 13:** Climate Action – Pupils simulate climate-related effects such as floods and learn about natural mitigation strategies
- **SDG 14:** Life Below Water – Pupils reflect on how protecting streams helps aquatic life downstream
- **SDG 15:** Life on Land – Pupils create and observe habitats that support terrestrial and riparian biodiversity

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