

River

Flowing Through Cities, Cooling the Land, and Shaping Life

Keywords:

river, water cycle, landscape, urban climate, flood risk, ecosystems, settlements, civilization, sailing

Target group:

primary school pupils (ages 6-11)

Objectives:



This activity helps pupils understand the vital role rivers play in both natural and urban environments. Rivers cool down overheated cities, support biodiversity, and provide drinking water, transport, and beauty. At the same time, they can pose risks, such as flooding. Pupils will learn that many of the world's earliest civilizations began near rivers, and that rivers are still key to sustainable city planning today.

Through hands-on work, they will construct a river model and test it by releasing a small boat, gaining insight into flow, slope, and water dynamics.

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 of various types
- Paper, markers, crayons, and coloured pencils, scissors and glue, recycled materials such as plastic bottles, bottle caps, or packaging
- Long strip of blue plastic or waterproof fabric (to create the riverbed)
- Water in buckets or watering cans
- Stones, gravel, sand, natural materials (twigs, leaves, moss)
- Toy animals (e.g. beaver, fish, frog, duck, otter) and small plastic or wooden boats
- Photos or illustrations of major rivers, flood protection systems, and river-based cities

Note: Encourage pupils to repurpose available materials creatively. If LEGO bricks are not available, pupils may use basic craft supplies to bring their ideas to life through drawings and handmade models.

Introduction:

Begin with a simple question: “What does a river do?” Pupils may mention fish, water, or swimming. Explain that rivers are much more than flowing water — they support life, connect places, cool the land, and have shaped human history.

Use a world map to show how the first great civilizations — such as those along the Nile, the Tigris and Euphrates, the Indus, and the Yellow River — developed near rivers. Explain why: water for drinking and farming, transportation, and rich soil. Move on to modern cities: many still grow along rivers because they offer resources and natural cooling, especially during hot weather.

But rivers can also be dangerous — especially during heavy rain or snowmelt. Ask pupils if they’ve ever seen a river flood. How can we build near rivers while staying safe?

Procedure:



Preparation

With this knowledge in mind, tell pupils they’ll now become river designers. They will create their own riverbed, design the landscape around it, and build a boat to test how water moves through their model.

Before starting, encourage pupils to explore what happens when water meets different surfaces — stones, sand, or slopes. Ask:

- What slows down water?
- What makes it speed up?
- Where would animals live along a river?

Construction

Begin by preparing the river course:

1. Lay down the blue plastic strip on a sloped surface (natural ground or a long tray)
2. Shape the riverbed with curves and meanders, using stones and natural materials
3. Create riverbanks, adding wildlife figures, moss, small bridges, or houses
4. Fill the river gradually with water using watering cans or buckets
5. Observe how the water moves — adjust materials if needed to slow or direct the flow

Next, pupils can use small plastic or wooden boats or build their own small boat using bark, twigs, paper, and string. They can carve the bark for shape, add a mast and paper flag, and personalise it with drawings or colours.

Finally, place the boat in the river and watch it sail! Pupils may try adjusting the slope, changing the water speed, or improving the river's flow to help the boat travel smoothly.



Details

As the models take shape, guide pupils to observe and reflect:

- Does the river flow evenly? Where does it slow down or get blocked?
- What kind of places form along the banks — wetlands, forests, or beaches?
- Where could flooding happen, and how might we prevent it?

Encourage pupils to add signs of real river life: a beaver dam, a frog near the shore, birds nesting nearby. They can also design small urban areas next to the river, thinking about safety and beauty. If time allows, they can mark “flood zones” or test simple barriers that slow down water.

Stories

Invite pupils to tell the story of their river. Who uses it — a child on a boat, an otter family, a farmer, or a group of travellers? What happens along its journey? Maybe a village depends on the river for water and trade, or maybe an animal needs help when the current grows too strong.

Presentation

Each group presents their river to the class, describing its shape, how they designed it, and where their boat went. They explain which materials helped the water flow best and what challenges they faced — like making the boat float or fixing a flood zone.



Tips:

- Allow pupils to shape their river freely, with curves, forks, and small deltas.
- Use guiding prompts like: "Where would you build a house?" or "What makes a river safe and clean?"
- Remind pupils that rivers are more than water — they are lifelines for nature and people.



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 local river or stream and observe how water moves, what lives nearby, and how it's protected.
- Research famous rivers and the cities along them.

Curriculum Connections:

This activity integrates:

Science (*water flow, erosion, ecosystems*)

Technology (*model-making, problem-solving, observation*)

Social Studies (*urban cooling, flood prevention*)

History (*origins of civilization, rivers in human development*)

Art (*design, creativity, construction*)

Language (*storytelling, discussion, presentation skills*)

SDG Connections:

- **SDG 6:** Clean Water and Sanitation – Pupils explore the importance of rivers as water sources and how to keep them clean.
- **SDG 11:** Sustainable Cities and Communities – Pupils discover how rivers cool cities and support resilience.
- **SDG 13:** Climate Action – Pupils learn about flooding risks and water management in a changing climate.
- **SDG 15:** Life on Land – Pupils support habitats that rely on rivers and reflect on their protection.



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