Rain Garden

Garden that Captures and Cleans Rainwater

Keywords:

rain garden, runoff, filtration, biodiversity, sustainability, water management, habitat

Target group:

primary school pupils (ages 6-11)

Objectives:

This activity introduces pupils to the concept of rain gardens — planted areas that absorb and filter rainwater runoff. By building models using LEGO, natural materials, and creative thinking, pupils will explore how these gardens help reduce pollution, prevent flooding, and support biodiversity in urban spaces.

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
- Clear trays or plastic containers to act as the garden base
- Soil, sand, small stones or gravel for layers of filtration
- Water containers (cups, squeeze bottles, pipettes)
- Paper towels, trays, or cloths for cleanup and overflow
- Optional: small plant models, LEGO flowers, or toy insects
- Sketch paper and pencils for planning designs
- Visual materials: diagrams or photos of real rain gardens
- Optional: food colouring to simulate dirty runoff and test filtration

Note: Use waterproof surfaces or work outdoors if possible. Adjust materials to age level — younger pupils can focus on building form and flow; older pupils can experiment with real filtration and stormwater concepts.

Introduction:

Begin by asking pupils: “Where does rainwater go when it falls on a roof, street, or playground?” “Can we help nature clean the water before it reaches rivers?”

Use diagrams or short videos to explain the problem of stormwater runoff — when rain flows over hard surfaces, it picks up dirt, oil, and trash, carrying pollution into natural water bodies.

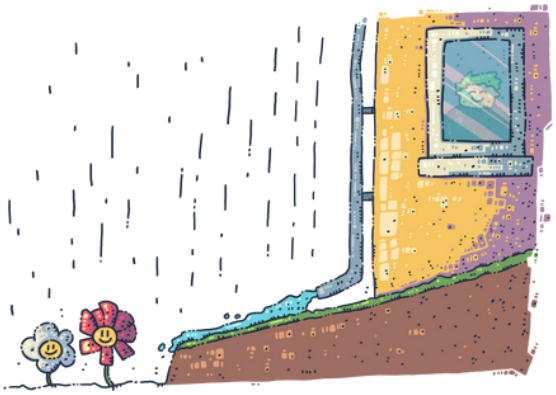
Introduce the idea of a rain garden: a special garden designed to capture, filter, and absorb this water. It usually includes layers of soil, sand, and plants that help slow the flow, remove pollution, and allow water to soak into the ground.

Procedure:

Preparation

Ask pupils to sketch their own rain garden design. Their plan should include:

- A water entry point (e.g. pipe, slope, roof)
- A flow channel or shallow basin
- Layers of filtration (stones, sand, soil)
- A variety of plants and features (e.g. rocks, benches)
- An overflow area for heavy rainfall



Construction
Pupils begin building their rain garden model and then test it by carefully pouring “rain” (clean or coloured water) into the inflow point. They observe:

- How fast the water flows
- Where it pools or drains
- Whether it soaks into the layers or overflows
- If the garden filters any dirt or colour from the water

Encourage them to improve their design — e.g. changing the slope, deepening the basin, or adding more plants.

Details
Now pupils refine their rain gardens by adding realistic, functional, and imaginative elements. Challenge them to include:

- A plant diversity zone – tall grasses, flowering plants, and ground covers
- Insect habitats – places for bees, butterflies, or frogs (can be LEGO or symbolic)
- Natural filtration enhancements – more porous materials, mini “swales,” or tiny wetland zones
- Signs or symbols – labelling inflow, filtration zones, and pollinator areas
- Rain chains or decorative water features – combining aesthetics with purpose
- A surprise feature – like a LEGO mushroom, solar light, or secret tunnel for worms

Stories
Pupils create short stories based on their model, blending science with imagination. Examples of story ideas:

- A dirty water droplet falls from sky and finds a garden that welcomes and cleans it.
- A seed buried deep in the garden waits for rain to grow and becomes a flower that attracts the bees.

Presentation
Each group presents their rain garden model to the class. Their presentation should include:

- A walk-through of their garden’s key features: inflow, filtration layers, plants, overflow
- What worked well in the water test — and what they changed afterward
- Their favourite detail or most creative solution

Encourage the audience to respond with curiosity and encouragement.

Tips:

- Emphasise that trial and error is part of the process: the first model may not hold water or drain properly, and that's okay.
- Encourage pupils to go beyond copying — they can invent new rain garden features.

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:

- Research plants suitable for real rain gardens in your climate.
- Invite a landscape architect or environmental planner to talk about green infrastructure.

Curriculum Connections:

This activity integrates:

Science *(water cycle, filtration, ecosystems, soil types, plant biology)*
Engineering *(planning, building, testing models, nature-based solutions)*
Mathematics *(measurement, flow rates, comparison, spatial reasoning)*
Art *(model-making, design aesthetics)*
Language *(storytelling, oral presentation)*
Environmental Studies *(sustainability, climate resilience, urban ecology)*

SDG Connections:

- **SDG 4:** Quality Education – Engaging pupils in cross-disciplinary, action-oriented learning
- **SDG 6:** Clean Water and Sanitation – Understanding water pollution and how to reduce it
- **SDG 11:** Sustainable Cities and Communities – Creating green infrastructure for climate-adapted urban spaces
- **SDG 13:** Climate Action – Modelling solutions for increased rainfall and runoff caused by climate change
- **SDG 15:** Life on Land – Supporting local biodiversity through habitat creation

Co-funded by the European Union

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