STEAM Education & Leadership Workshops:

Lesson Plan - Green Shade Builders: Creating Cool Spaces In Our School

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Age range

9 - 12 Years

Learning objectives

- ☑ Learners will be able to analyse the impact of a hot environment on learning.
- ☑ Learners will explore how strategic tree planting offers a viable, sustainable solution and its importance for the regulation of temperature in our environment.
- ☑ Learners will be able to describe the difference in temperature between a shaded area and a sunny area and explain which parts of the plant are most important for making the air cooler.
- ☑ Learners will be able to explain the connection between planting trees and improving the school learning environment (by reducing heat and noise) and outline how these local actions contribute to fighting community-wide climate change.
- ☑ Learners will be able to identify simple, everyday causes of climate change (e.g., pollution, deforestation) and propose how common local waste materials (e.g., tires, plastics, cans) can be repurposed as practical tools for tree planting.
- ☑ Learners will work collaboratively to plant a tree or flower using recycled materials and demonstrate the correct, ongoing maintenance practices (e.g., watering, monitoring) required to ensure the plant's long-term survival.

Structure of the lesson

- Introduction to the importance of tree and flower planting (10 mins)
- STEAM Connection (10 mins):
- Group Activity (50 mins)
- Reflection & Commitment (10 mins)
- Wrap-up & Assignment (10 mins)

Duration

1 hour 30 Minutes

Note to Educators

- Keep the project very practical; these pupils learn best by doing.
- Use simple language and relatable, daily experiences (e.g., “the way we look for shade under big trees at home”).
- Allow pupils to lead; the aim is to help them feel responsible for improving their school environment.
- Emphasise safety when using tools and handling tyres/plastics.

- Encourage creativity, children love decorating and personalising their work.
- Help pupils connect their local challenges to global issues by showing how the heat and environmental problems they experience in their communities are part of broader global concerns such as climate change, deforestation, and rising temperatures. This builds global awareness while grounding learning in real-life local contexts.

Resources

- **Slides**: Green Shade Builders
- Materials required
    - **Planters:** Upcycled vehicle tires (cleaned), large plastic containers, or 5-gallon buckets.
    - **Protective Gear:** Heavy-duty gardening gloves or **Improvised Hand Protection** (thick plastic bags secured at the wrist with elastic bands).
    - **Seedlings:** Local drought-resistant trees or hardy flowering shrubs.
    - **Engineering Tools:** Hand trowels, organic compost, and decorative weather-resistant paints.

Timing	Facilitator's actions	Students outcomes	Technical notes
0–10 mins	**Introduction to tree and Flower Planting** Start by guiding **pupils** to understand the purpose of the project. Engage them through shared experiences regarding the impact of human activities **on** climate change. This foundation prepares students to explore further topics in the lesson. Introduce the problem: heat in the school, lack of trees. Show quick examples of shade-providing trees. Ask: *"How do trees make us feel cooler?"*	**Awareness and Connectedness** Focus: Sense of Identity, social awareness, a sense of purpose, Perspective-taking, and Sustainability. Students develop an awareness of their surroundings, recognising that trees and flowers provide essential shade and natural cooling. They understand that preserving greenery is vital for mitigating heat and the local effects of climate change. Students understand the negative consequences of burning waste, deforestation, and hazardous emissions on their environment.	Use real-life examples from their community. Keep the discussion interactive with the students leading the conversations.
10–20 mins	**Explain STEAM Connection** **Science:** Parts of a plant, lifecycle, photosynthesis, cooling effect and Transpiration.	**Mastery and Connectedness** **Focus**: Critical thinking, Fundamental/Core Knowledge, Global mindedness. Students connect STEAM skills to real-world environmental problems. They identify the materials and	If possible, bring actual materials to show physically.

	Technology: Using plastic for drip irrigation and as nursery tools for planting. **Engineering:** Designing garden structure, simple plant guards using tyres and plastics **Arts:** Decorating the tyre pots/flower beds **Mathematics:** Measuring the depth of the planting hole and spacing. Show materials to be used (tyres, plastics).	connect each part of STEAM to the project. Mastery is achieved as students deepen their foundational knowledge of parts of plants, photosynthesis, tools for planting trees, decoration, measurement, practising observational skills, and making connections between trees and wind that causes a cooling effect. Students strengthen their Engineering Design Process (EDP) by **sketching their design** in their notebooks before building to	
20 - 70 Mins	**Group Activity** Group the students in groups of 4-5 depending on class size and guide them to participate in planting activity and ensure that each takes leadership roles (Project Manager, Environmental scientist, Resource officer e.t.c). Ensure these roles are rotated. Ensure to supervise the entire activity to avoid any form of accidents.	**Agency, Mastery and Wellbeing.** **Focus:** Critical Thinking & Problem Solving, collaboration, sense of belonging, curiosity, leadership and social awareness. **Students take leadership roles in assigning who to carry out the following:** ● Picking a planting spot ● Arranging tyres/plastics ● Digging the soil and adding compost ● Planting a tree/flower ● Decorating tires. ● Recorder/note taker Students work in teams, plant their tree/flower, decorate, and understand care steps. This active participation helps them find their voice in scientific inquiry, promoting a sense of agency in their learning process as they track tree/flower development over time.	Ensure tools are safe. Use gloves or thick plastic bags secured with rubber bands.
70 - 80 Mins	**Reflection & Commitment** Facilitate a reflection circle: ● *"What did you learn?"*	**Connectedness and Wellbeing** **Focus:** Sense of ownership, collaboration, observation, and brainstorming.	Keep reflections short. Record group responsibilities on chart paper

	• *"How will your tree help the school?"* Assign watering groups.	Students build ownership of projects by working collaboratively, sharing their observations and brainstorming ways to support the entire activity and express learning in simple language. **Personal and Community Impact** Students understand how planting trees fosters a sense of community and improves their school experience by providing shade, cleaner air, and a cooler environment. They recognise that their actions contribute to the well-being of the school and wider community by reducing heat, improving air quality, and inspiring others to care for nature."	
80 - 90 Mins	**Wrap up** • Take group photos, label each tree/flower, and encourage a weekly care routine. • Celebrate effort.	**Wellbeing** **Focus:** Self-confidence, Commitment, and Optimism. Students feel proud, connected, and motivated by their project, which boosts their self-confidence, well-being, and long-term commitment to improving the school environment.	Use affordable labels (cardboard, cut plastic). Encourage pride in teamwork.