Rain Collector

TINK@School

Co-funded by the
Erasmus+ Programme
of the European Union

Rain collector

Duration	*3 hours*
Target group	*Students that can use scissors safely in combination with plastic (approximately ages 10 and older)*
Connection to curriculum	*This activity can help students to work on fluid mechanics and physics, while challenging their practical and creative skills.*
Particulars	*Collect recyclable materials a few weeks in advance for the students to tinker with.* *It is also advisable to have easy access to water as it is needed for testing the rain collector.*

Outline

In this tinkering activity, the focus is on building a rain collector using recycled materials previously gathered by the students themselves.

This activity is at its core connected to sustainability issues: students are asked to use recycled materials collected from their home garbage and the goal of the activity itself is to collect and use water that would otherwise be lost.

Connection with sustainability

During this activity, students consider rain as a natural resource that is becoming scarce. They construct new ways to collect rain water and think about the methods to distribute the water. The students use recyclable materials to construct their rain collectors.

Health and safety

Hazard	**Controls**
Box cutters are very sharp, students can cut themselves.	*Do not let all ages use the box cutters, do not leave them lying around, instruction in advance on how to use them, always slide them in when not in use. Always use a cutting mat.*

Glue guns get very hot.	*For young ages use the glue guns only under supervision. Let the students use them in a designated place, and keep an eye on it.*
Hand drills have sharp points, students can cut themselves	*Do not leave the hand drills lying around, give instruction beforehand on how to use them, always use them under supervision. Always use a cutting mat.*

Essential materials

Item	Comment	Total
Containers	such as tins, jars, bottles, soap dispensers; make sure the containers can be cut	Collected by the students before the activity
Umbrellas		Collected by the students before the activity
Toothpicks		3 boxes
Elastic bands		2 boxes
Wooden sticks		3 boxes
Rubber hose	Various sizes	4
Straws		2 boxes
Rope		4 balls
Plastic such as sheets, shopping bags, etc.		Enough for the students to tinker with
Padding		Enough for the students to tinker with
Cardboard		Enough for the students to tinker with

Essential tools

Item	Comment	Total
Hot glue guns		3
Vinylic glue		5
Tape		15
Hand drill		2
Scissors		15
Box cutters	Optional	3
Cutting mats	Optional	3

Preparation

Ask the students to collect umbrellas and containers such as jars and bottles before the activity. Stress that you have to be able to cut into the containers.

Set the classroom in a tinkering setting: set up a table with tools and a table with all materials on other sides of the room so the students are encourages to walk around and be inspired by other groups. Sort the materials based on function and size, so the students can easily see what is available.

Create designated spaces for the hot glue and hand drill tools, so they can be used under supervision.

Activity Plan

Introduction (30 minutes)

- The activity starts with a discussion on how water is extremely precious, especially in places where it is scarcely available. The students are invited to share how and when they use water in their daily life and share which places they see in their daily lives where water is needed, for example in factories or in agriculture.
- Engage the students in a conversation about the ways we collect and save rain water. Pictures, photos or short videos of rain collectors can be shown as inspiration.
- The teacher presents the outline of the activity and mentions the range of materials, where the materials are located. The teacher pays special attention to simple and clear rules, emphasizing safety when handling tools.
- In this activity the students are going to make something with which they can collect rain. To engage the students in different ways, there are variations to the prompt the teacher can add to the activity:
    - Create a rain collector that distributes the water evenly
    - Create a rain collector that distributes the water over a large distance
    - Create a rain collector with which you can control the amount of water it collects and releases
- The students are encouraged to work in groups. The teacher outlines simple and clear rules, emphasizing safety and teamwork.

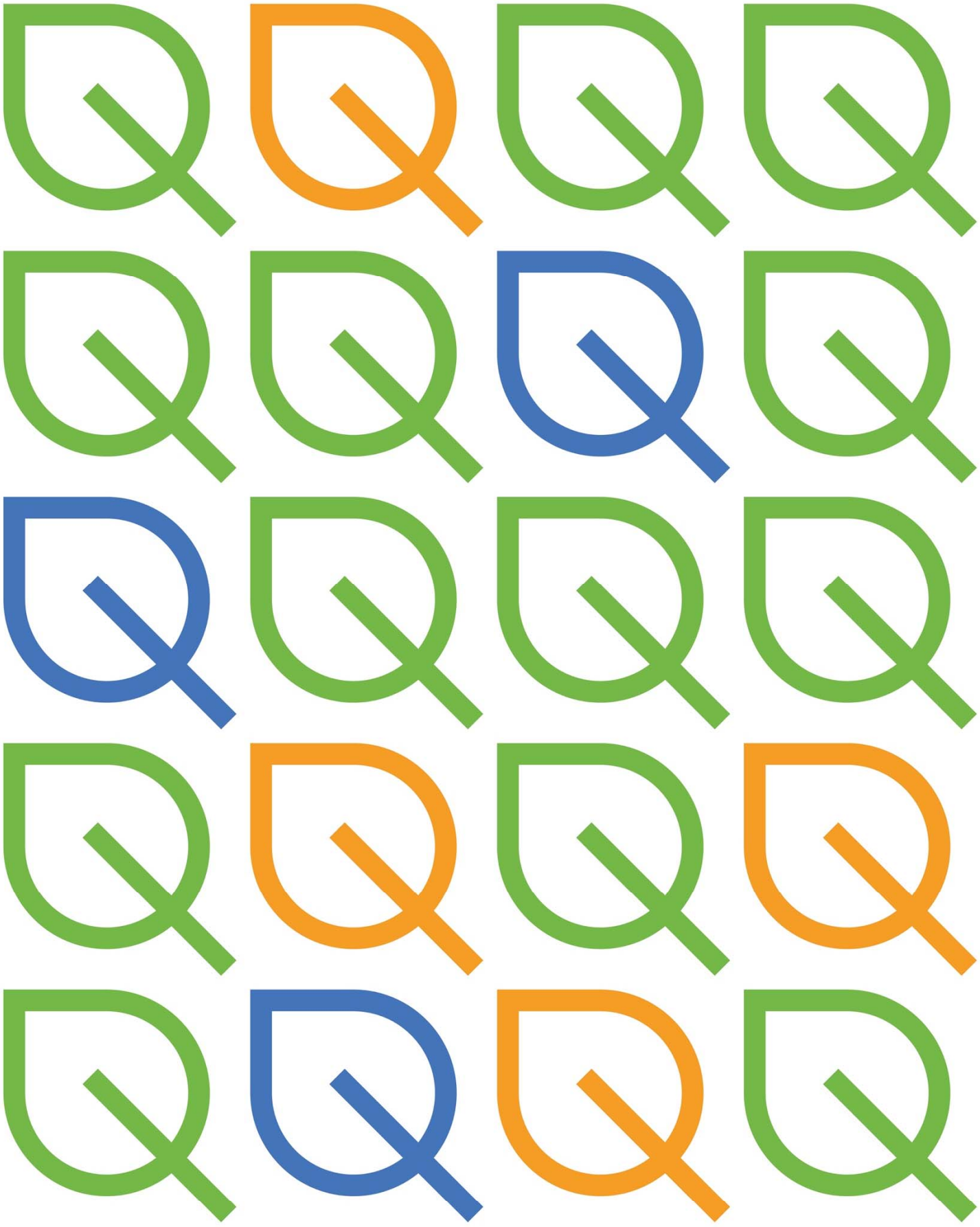
Managing the activity (120 minutes)

- Pay attention to safety. Students work with hot glue guns, which get hot, and hand drills, which can be sharp.
- Indicate every 10 minutes how much time is left.
- Walk around the room write down remarks the students make and other observations that strike you.
- If students struggle with their ideas, ask them to articulate their problems or goals. Then ask questions that guide them to the right direction.
- If the students get stuck, encourage them to walk around the room and see how the other pairs progress.
- Tips for guiding this activity:
    - Have the students test their rain collector outside to prevent the floor from getting wet.
    - Show some examples to encourage creativity
    - Simulate rain by using containers like watering cans or bottles.

Conclusion (30 minutes)

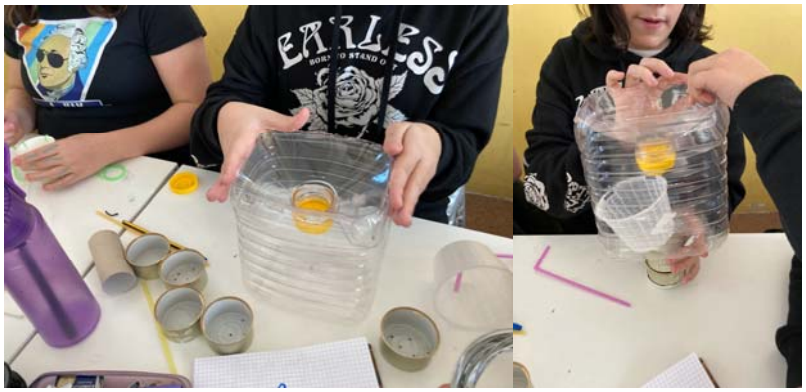
- At the end of the activity, the teacher invites each group to present their work.
- The teacher can stimulate the conversation about the result by asking what difficulties were encountered and what progress was made during the work. The teacher can ask how they collaborated, what inspired them, whether they deviated from their initial ideas and how. Note how many works of art relate to the environment and how objects from waste have been incorporated.
- Have a concluding discussion with the students to collect their impressions, difficulties, satisfactions and whether they had any unexpected thoughts during the whole tinkering experience.
- The rain collectors can then be installed in the school garden or vegetable garden, on window sills or wherever possibile. Students can also take them home and use them on their balconies.

The activity can also be used to address the connection between balance and size, capacity and mass.



Appendix

Appendix Examples of possible outcomes



Colophon

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