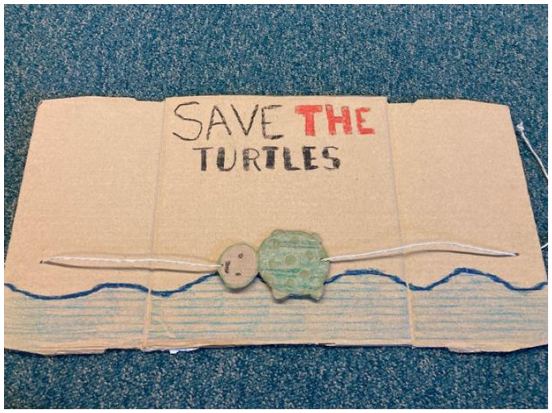
Tinker a kinetic sign

TINK@School

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

Tinker a kinetic sign

Duration	*90 minutes*
Target group	*Students that can use scissors safely in combination with cardboard. (approximately ages 9 and up)*
Connection to curriculum	*e.g. social studies, sustainability, art, (fine motor skills and coordination) Can be used with many topics, for example, you can assign students to create a moving explanation board about flowers.*
Particulars	*Collect cardboard boxes and other paper material a few weeks beforehand so there is enough material available for the students.*



Outline

In this tinker activity, students create an action sign on the theme of sustainability. Sustainability has many sides, and can be tackled on a small scale. For example in school. Students think about what they would like to see differently at school when it comes to sustainability, and make an action sign to convince other students, teachers or parents of this. In addition, it has to be a sustainable sign, so it is made with recycled cardboard. By playfully creating a changing action sign, students learn to engage with sustainability, and think about how to properly communicate their message on this topic. In addition, they also learn different techniques to use pop-up/movement.

Connection with sustainability

- They think about problems or solutions connected to sustainability issues to create a sign to either express their concern about a topic or invite other people to take action.
- Students work with recycled cardboard boxes and paper and see that waste can be reused

Health and safety

Hazard	Controls
Box cutters are very sharp, students can cut themselves.	Do not let all ages use blades, 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.	Give an instruction on how to use the glue guns. Let the students use them in a designated place, and keep an eye on it.

Essential materials

Item	Comment	Total (for 30 students)
Rope/string		2 balls
Skewers,cocktail sticks and/or popsicle sticks		1 or 2 packages
Cork	optional	15
Pegs		25
Cotter pins		2 boxes
Paperclip		2 boxes
Rubber bands		2 boxes
Recycled cardboard (sturdy)	Large packing boxes, serves as base of the sign. Cut the boards beforhand	1 per group; size approximately A4-A3 + some extra to build with.
Recycled cardboard (thinner)	Think: biscuit packaging, tea boxes, egg cartons, toilet rolls, cardboard cups, toy packaging, etc.	Enough for all groups to tinker with.
Paper and craftmaterials	Think: Old posters, flyers, misprints, candy wrappers, fruitnets, etc.	Enough for all groups to tinker with.

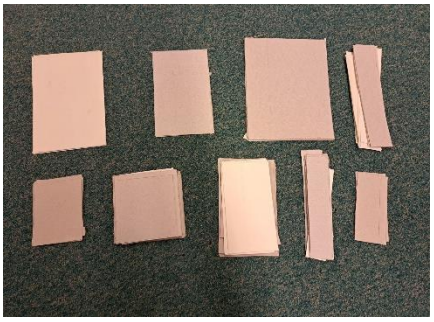
Essential tools

Item	Comment	Total (for 30 students)
Scissors		15
Painter's tape		15
Glue		15
Stanley blades		15
Cutting mat		15
Stapler		5
Pencils/wasco	Don't supply a lot o to encourage them to be creative with the cardboard materials.	Tray per pair
Glue gun	Optional	1
Eraser		15

Preparation

- Try some techniques in advance. Make sure there are examples to show the students, these can be homemade examples or the examples from the Appendix.
- Collect enough cardboard. Provide a good variety of sturdier cardboard (as a base) and thinner cardboard (for cutting and gluing).
- In advance, cut basic boards from the thick cardboard from which *the students will make their sign.* The size can be determined depending on the age of the students. (Smaller boards for younger students.)

Tip: Make the materials more attractive to use by cutting them the same size beforehand and display them according to color or size. See the examples for cardboard materials below:



Cardboard materials sorted by size and shape

Recycled cardboard boxes cut into shapes.

Preparing room:

- Place enough work tables throughout the classroom. The number depends on the number of students. 1-2 groups can work per table.
- For each table, divide the base boards.
- Make 2-3 materials tables scattered around the room, one for big cardboard, one for small cardboard and one for tools and other materials. This way, students have to discover what materials are there, and walk to get them during which they also see what others are making.

Activity Plan

Introduction (15 minutes)

Explain to the students that signs are used to convey messages to other people. Think of signs used in demonstrations or advertisements. In this activity the students are going to design a sign like that about sustainability.

Ask the students if they know the term sustainability and what it means. Explain that the term sustainable is used for products that do not harm the earth and nature, and that sustainability is the concept that stands for living with happy people and animals on a healthy earth now and in the future. Sustainability is a very broad concept; but small acts can make a difference. Like making people more aware about an issue, recycling trash or buy secondhand clothes.

Hold a brainstorm with the students about what sustainability issue they want to raise awareness about or invite people to take action on. Remind them it can be about simple things.

1. Write down everything you can come up with when thinking about the concept of sustainability. (Examples: pollution, electric cars, boring, hippies, etc) (3 min)

2. Write down everything you can come up with when thinking about your neighborhood, home or school connected to sustainability. For example problems or possible solutions. (5 min)
(Examples: litter, throwing away food, paper use at school, water shortage, recycle materials,)

Help the students to come up with an idea for the sign. With the results of the brainstorm in mind, are there any issues, solutions or ideas about sustainability they want to be known? (Examples: buy second hand, take care of nature, be kind to bees) Encourage the students to think of a problem or idea that they find important.

Instruction: Create a moving sign (5 minutes)

If the students know what they want to convey, they can start tinkering. Tell them they are going to make a sign, it is not just another (protest) sign, but a sign in which something can change or move. There should be a movement or pop-up element in it so that the sign really attracts attention. Show the students some examples (see appendix.) Also mention that it will be a sustainable sign, so as much recycled material as possible will be used.

Give each group (2-3 students per group) a thicker cardboard as a base. They can pick their own thinner cardboard and other materials to get started and try out some things with. It can be useful to have a few small examples ready of pop-up/movement, to inspire the students and get them started.

Students have 50 min to make the sign. Indicate a few times how much time is left.

Managing the activity once it is in progress (50 minutes)

- Pay attention to safety, students work with box cutters or scissors , which are sharp, and glue guns, which get hot.
- Indicate every 10 min how much time is left.
- Observe the groups and see what students are working on, and whether students are frustrated or stuck.
- Ask questions to get students thinking about possible solutions or to help them articulate their goals or problems. Then ask questions that make them see for themselves where things might be going wrong or encourage them to come up with solutions.
- Encourage students to look at other groups or the material tables for inspiration.
- Write down special things you see so you can tell them when discussing afterwards. (If you saw them working together really well, or overcoming a frustration.)
- Have the groups round off after 50 min.
- In case students finish earlier, making signs can also be stopped earlier, let it depend on the group.
- Tips for guiding this particular activity:
    - See appendix for examples of moving paper constructions. The first three ones are really easy to make.
    - Encourage students to try out mechanics first and make them work before decorating.
    - Use posters, magazines or folders for students to cut out images to use in their posters
    - Cotterpins are a handy tool to make objects move or to create a slot between two pieces of cardboard.

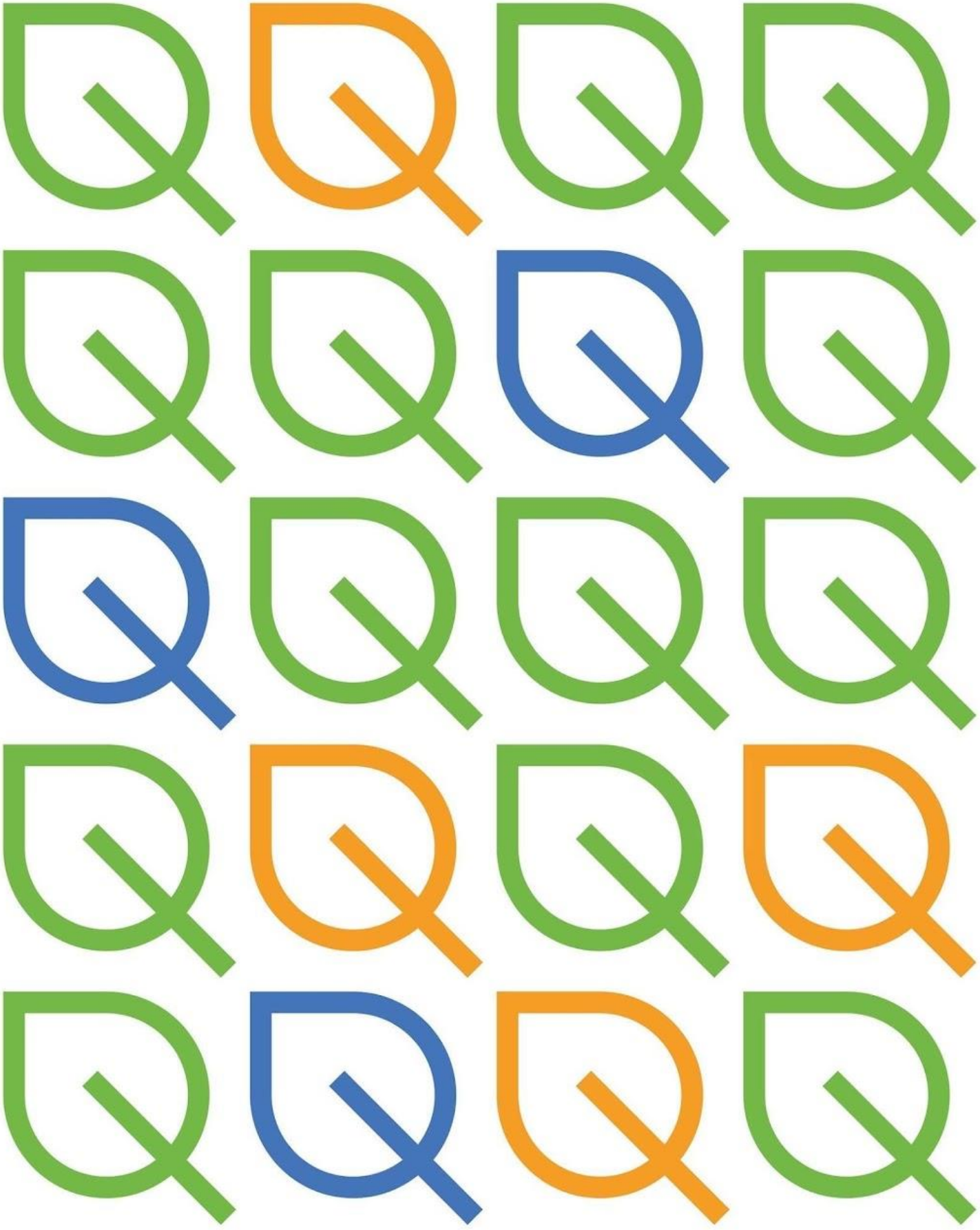
Clean up, make sure that materials that can be used again are not thrown away and paper scraps are collected in the paper trash.

Conclusion (20 minutes)

Evaluate the activity together with the students. First discuss what you saw happening among the different groups, were there any difficulties? What topics did you see on the other signs? Ask some students what they ran into or what problems they encountered, and how did they solve them?

Depending on the class, you can give some students the chance to present their action sign. Let them tell which sustainability topic they have chosen and why they think it is an important one. Ask them to show their changing elements, and what they did to convince the other students. Ask the class if they think this is also an important topic.

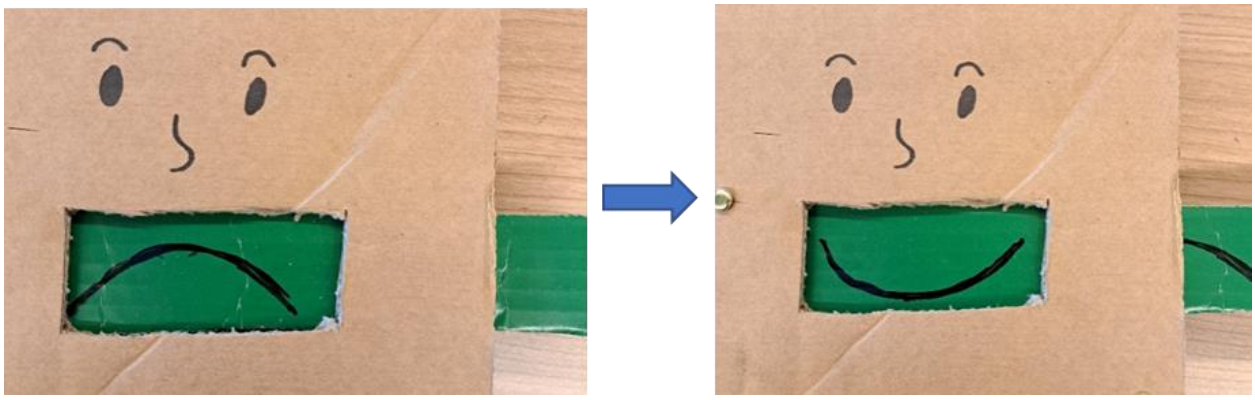
You can also choose to give students time to walk past all the signs and look at them. Afterwards, discuss with the students in class what they saw on the other signs. What other issues did they come across, and are they convinced that these are also important? What different changing elements did they come across? Conclude in class with the message that sustainability is an important topic, and that you can already apply this with small things in school but also, for example, at home.



Appendix

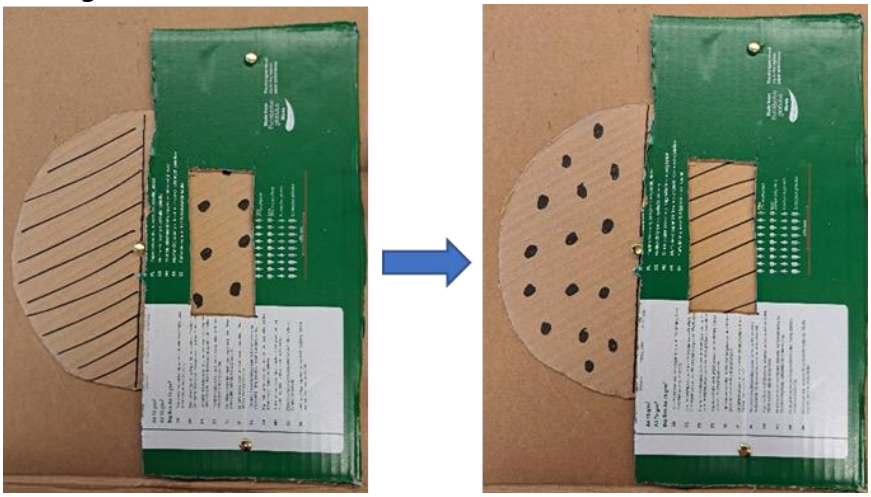
Appendix Examples of paper techniques

Slide

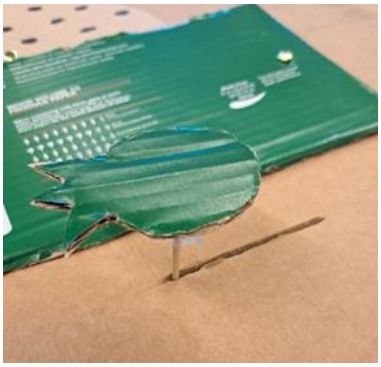


By placing two images on a strip, the image changes when you pull the strip.

Turning circle



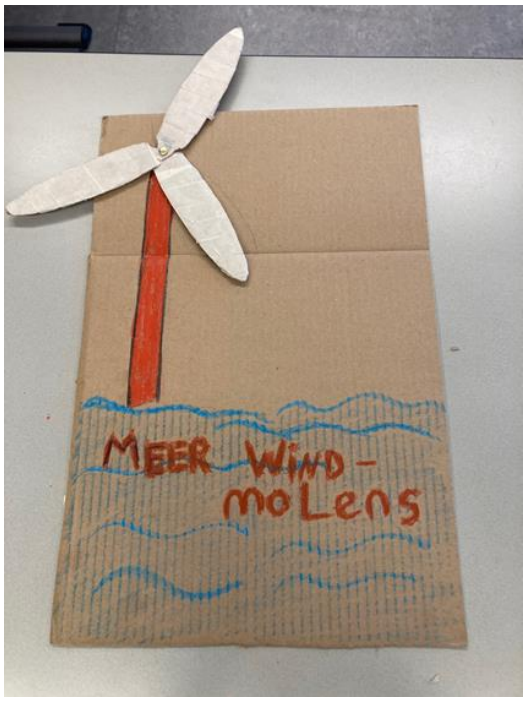
The sign changes by turning the circular disc.

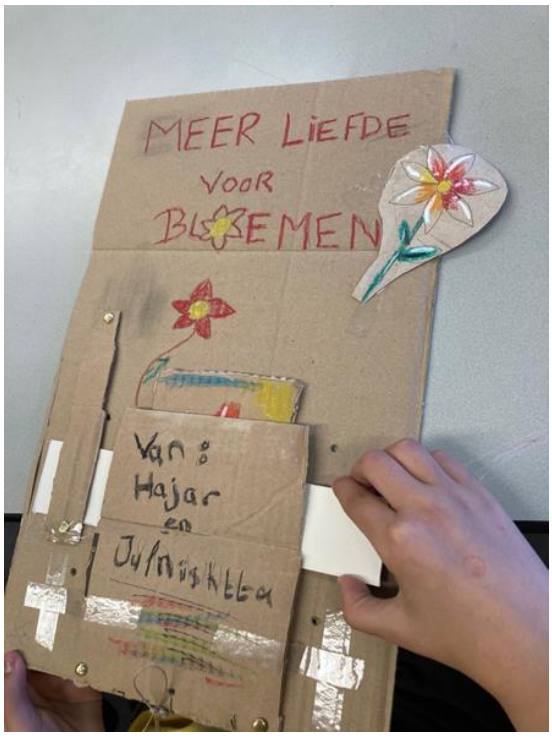


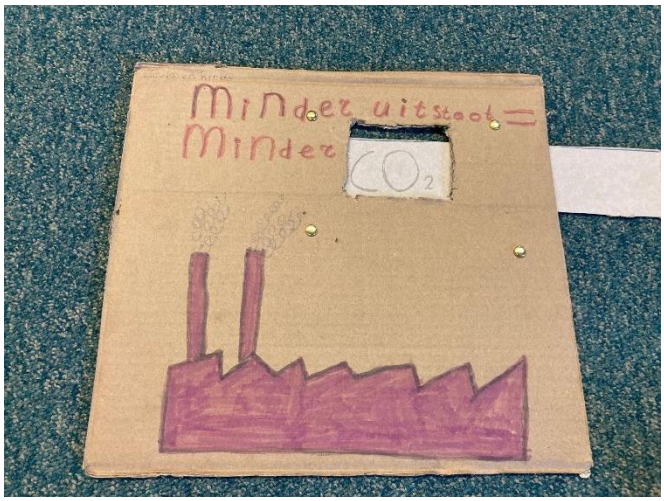
Skewer slide

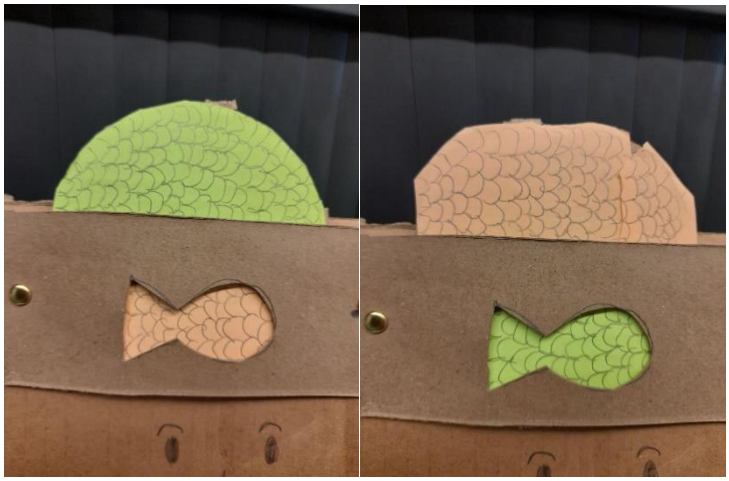
The balloon is attached to a skewer sticking through the sign. Moving the skewer back and forth moves the balloon across the sign.

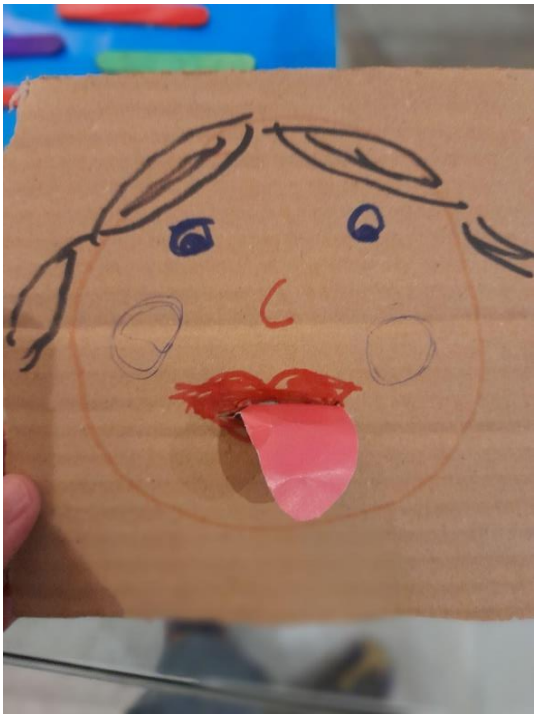
Appendix Examples of outcomes












MOOD DETECTOR

Colophon

This publication is a product of Tink@school (2022-1-IS01-KA220-SCH-000087083), which was funded with support from the Erasmus+ Programme of the European Union. This publication solely reflects the views of the authors, and the Commission cannot be held responsible for any use that may be made of the information contained therein.

This activity is authored by Judith Bal (NEMO Science Museum) and Denise Kool (NEMO Science Museum)

Project Coordinator

Háskóli Íslands, Iceland

Partners

Bartolomeo associazione culturale, Italy

CRES Centro di Ricerche e Studi Europei - future business, Italy

NEMO Science Museum, Netherlands

MIO-ECSDE, Greece

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