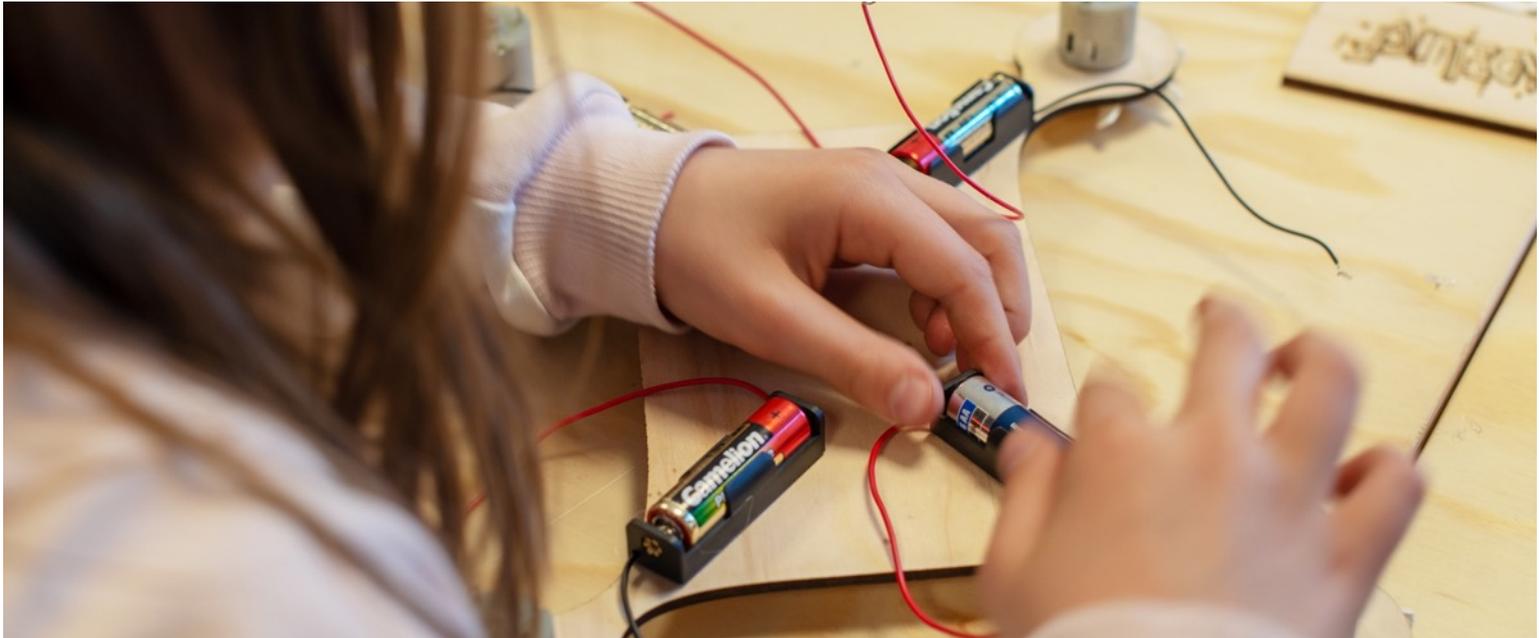




Entrepreneurial skills
for young social innovators
in an open digital world



Tool

MAPPING THE PROBLEM



waag
technology & society



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Tool 1 – Mapping the Problem

Developed by Marielle Lens and Frank Vloet from Waag for the DOIT toolbox.

Tested and developed during three iterations the DOIT Action 'From Waste to Invention'.



Aim of the tool

In a design process, it is important to have a clear problem definition. It can be challenging to make a concrete and precise problem definitions to work with, especially for abstract concepts such as sustainability, which is spread globally and over time. The mapping tool is a method to map big, societal issues like sustainability in order to make them more concrete and tangible.

The mapping tool creates a physical and visual support to discuss the problem. By dividing the problem in smaller parts, you start seeing the relation between the parts that make up the problem. This enables children to define the scope of their project and come up with a problem definition of one of the aspects.



The mapping of the big societal issue creates a shared understanding and of the steps in the process. This will enable children later on in the process to understand what the other groups are working on, since they have constructed the map together.

Why we made this tool.

In the case of our pilot we wanted to talk about the problem of waste and sustainability in a bigger context the whole life cycle of textile, and not only production, use or waste.

One of the learning from our first pilot action was that children's knowledge of waste problems, mostly covers their own experience with recycling (separating waste at home and bringing it to specific bins in the street). But they don't know what happens after you put the waste in the bin. Also, they are unaware of waste problems in the production chain.

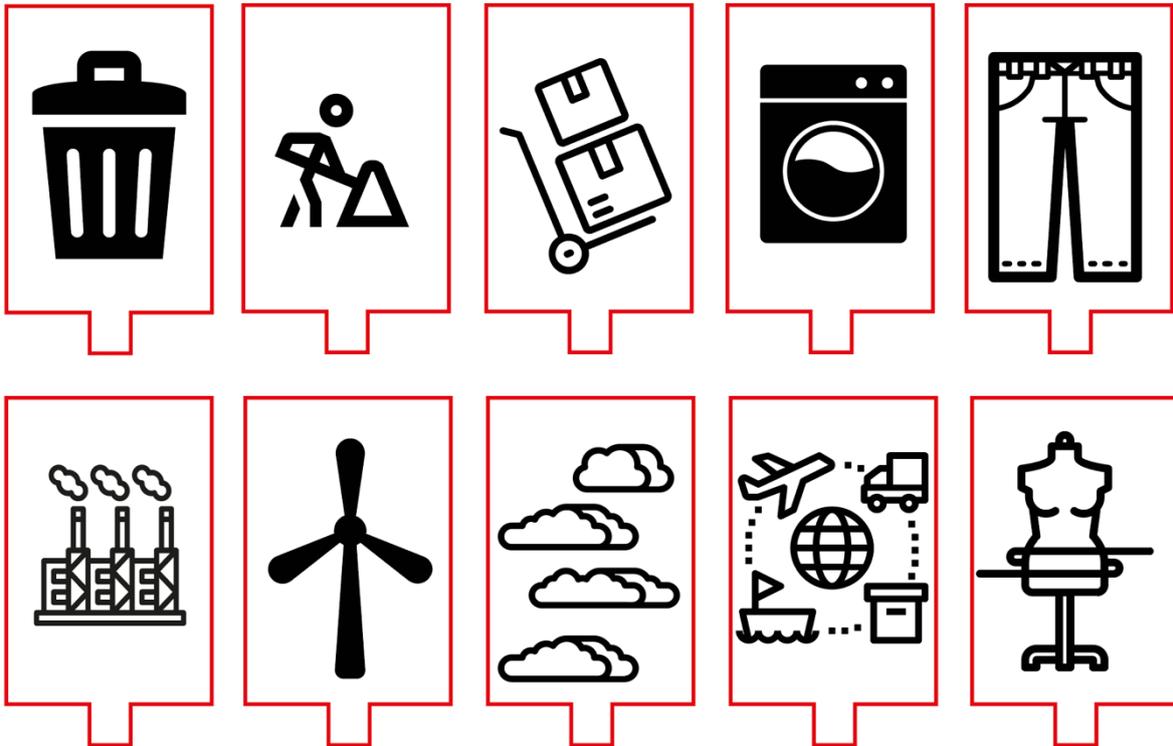
In our second pilot action, we tried to talk about the whole system (systems thinking). It is difficult for this age group (6-9) to follow cause and effect for abstract concepts like material flows. This is why we needed to make this more concrete and tangible. To do this, we made this tool, which is inspired by a tool from www.ontwerpenindeklas.nl and Waag's cocreation tool: the story puzzle available on <https://ccn.waag.org/>.

The original tool from ontwerpen in de klas the was aimed to build problems that take place in one location (for example, in a hospital or in a street). We had to adjust this, because the sustainability problem we wanted to explore, has different causes and effects that are spread all over the world. That is why we combined it with the Story Puzzle, this uses icons to visualise the topic, but is still very open ended, since the meaning of the icons are open for your own interpretation.

Preparation

- ✓ Define the scope of the problem you want to map. For example: sustainability and fashion
- ✓ Pick one object which the group is familiar with, through which you will explore the topic of sustainability. For example, a pair of jeans.
- ✓ Make signs that identify parts of the problem (can be done with the laser cutter, see attachment for design files, or printed out on glued cardboard)
- ✓ Spread the tables across the room for groups of children
- ✓ Take an object you can use as a case study for the problem (in our workshop this was a pair of jeans as a case to explore sustainability issues in the fashion industry)
- ✓ Get coloured markers & big sheets of paper.





Activity

1. Spread the children in groups of 4 to 5, one group per table. Each group needs a big sheet of paper and coloured markers.

2. Ask the following starter questions about the object, to get the thinking about the topic going:

- Who has a pair of jeans?
- How did you get it? (store)
- How do the jeans get in the store? (Factory)
- How do the jeans go from the factory to the store? (transport)
- What is needed for transport? (vehicle, fuel)
- What happens with cars that run on fuel? (CO2)

3. Explain that the production of a pair of jeans, is a process with many steps. There can long processes producing jeans with parts that are not visible for us. To visualise what needs to happen when a product comes to your home, we will map the process of making a pair of jeans.



4. The process will be mapped by using signs. The signs all have different icons with a meaning. The signs are a tool to discuss and visualise the problem. The children are free to give meaning or change the meaning of signs, but make sure they do this together, so they signify the same meaning for the whole group. If there is a sign missing, you draw one an icon an empty sign.
5. Start with the sign of the pair of jeans and place this on the sheet of paper. Make sure there is enough space around the signs to write.
6. The children work in groups. The aim is to get a shared understanding of the topic. It will happen that some children are more involved than others. Motivate all children that to ask questions, listen, discuss and explain what they are doing.
7. Try to ask many open questions. Thinking of the questions will help the children to put the next step on the map. This can a step forward or backward in the life cycle of a pair of jeans.

before you bought the jeans:

- ✓ What material is the jeans made of? (cotton)
- ✓ Where is cotton grown? Is this in the Netherlands or elsewhere?
- ✓ What needs to happen with the land to grow cotton?
- ✓ What do you need to grow cotton?
- ✓ Who makes the jeans?
- ✓ Who asked for the pair of jeans?
- ✓ How do the jeans come to the Netherlands?
- ✓ Where are jeans stored?
- ✓ How do jeans become blue?
- ✓ Where do you buy jeans?
- ✓ How did you get there?
- ✓ Were the jeans in a bag when you bought them?
- ✓ Did the jeans get delivered to your house?

after you bought the jeans:

- ✓ Forward in the life cycle:
- ✓ What happens when the jeans get dirty?
- ✓ What happens if the jeans get a hole in them?
- ✓ What happens when the jeans get out of fashion?
- ✓ When you grow out of it?
- ✓ When you throw it out?
- ✓ When you bring the jeans to textile recycling?
- ✓ When you give the jeans to someone else?





8. Make sure the children describe the steps in a few words when they are placing the signs. Also let them draw arrows to indicate the relations between the steps.

9. Let the children know when they have 5 minutes left to finish up. Ask them to tell the rest of the group what they wrote down and what they are missing.

10. Big issues such as sustainability can be overwhelming for children, it is important to create a sense of agency. The process behind making a product are difficult to grasp and invisible. By visualising the process and making it more tangible, the issue can be discussed with children. This can help realise that problems might be big, but exist of smaller problems. It might not be possible to solve the problem at once, but we can start by start to solve the smaller problems that make up the whole problem. One step at a time.



Tips for the facilitator

- ✓ Keep up the pace
- ✓ Ask many questions without giving the answer
- ✓ Explain a sign that hasn't been used.
- ✓ Take pictures of the whole process

