Irrigation Project

The background: We have a school garden! It is currently being watered with a hose once a day. We discussed some problems with this system:

- Spraying the ground once a day with water doesn't allow the water to soak as deeply into the soil
- A lot of water is lost through evaporation before it soaks deep enough into the ground (we are wasting water)
- Dumping a lot of water at once may erode the soil away from roots, cause damage to roots, and/or drown seeds.
- Someone has to physically water it every day (labour/responsibility)
- Pouring water on top of plants (and not directly to their roots) can make the leaves wet which can promote the growth of fungi
- No automatic control of which plants get certain amounts of water (some need more water, some need less).

Our resources: Our class is allotted a space of 250 cm by 250 cm in the garden. We will be planting okra and tomatoes. We will have access to:

- Tubes
- large water basins
- Waterproof clay
- Aluminum foil
- Rubber bands
- Duct Tape
- Toothpicks
- Paper clips, binder clips
- drills/hammers/other tools

You can also request some other materials if you wish (ex. An Arduino to program), or bring your own materials to add

The Challenge: You will be required to build a small-scale irrigation system that will provide small amounts of water continuously to our small plot of land without needing a person to do something each day. You will need to provide water to a minimum of 2 rows of plants, maximum 4 rows of plants. Your aim will be to provide water directly to the roots, and not sprayed onto the leaves.

Bonus challenge: tomatoes require less water than okra, can you organize your irrigation system to keep them watered with different amounts of water?

Assessment: You will not be assessed on your final product. You will be assessed on your participation, engagement, contribution, and reflection. The reflection rubric is on the back of this sheet.