

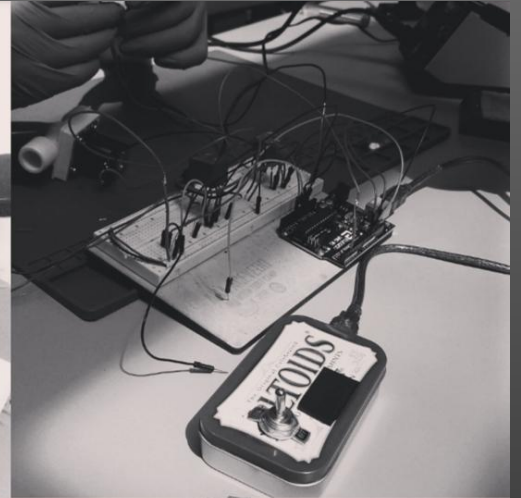
INDUINO GARDEN

Members:

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Annabelle Hauss
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Mentor:

Lisa Bennett



OUR PROBLEM:

- Our general problem is that not all people have place where they can have a garden whether it's not having enough space outside or living in a proper climate to grow plants.
- This product can be for anyone interested in an indoor garden.
- This tunes you into how you can garden sustainably and highlights how important gardening can be for your economical situation, and your physical and mental health.

HISTORY AND CONTEXT

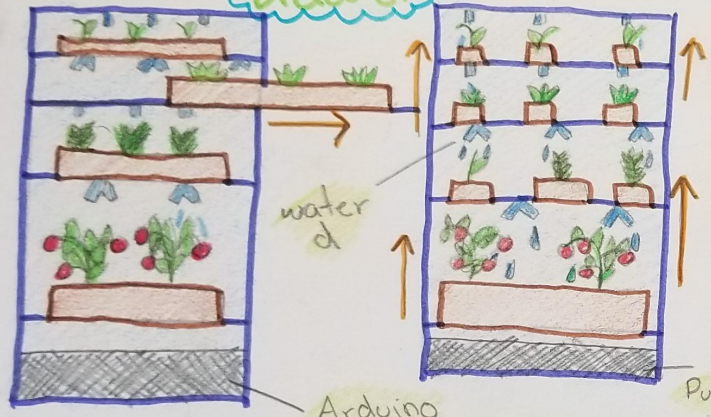
- Gardening can improve your mental health. It can also boost self-esteem and confidence, relieve stress and reduce depression. Growing your own food promotes a healthy lifestyle.
- The Induino Garden will aid the people that don't have the proper living area or climate to grow their own garden.

DESIGN PROCESS

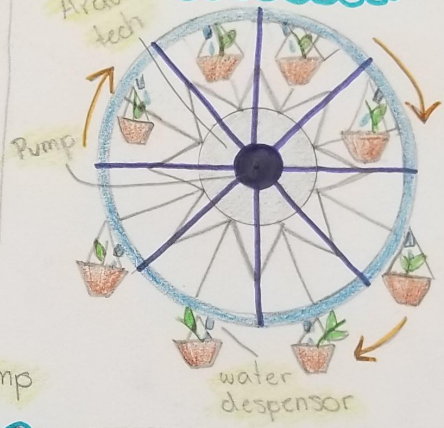
- In the beginning we had a lot of ideas and sketches for a potential design but reviewing and thinking about them made us realise that they were too complicated for our 3 week period. We knew we wanted a vertical design and we wanted to make it out of as much recycled materials as possible. One day walking to lunch we saw a rotating literature rack and it inspired us to make something like that. So we sketched a potential idea and decided that was going to be the final design.
- To make our invention human-centered, we made it so that it has a self-automated watering system. This makes it easier for humans to have a garden because they don't have to remember to water it. Also, we made sure to mount the button at a point that would be easy to access for most humans, rather than mounting it at the top of the six-foot invention.
- To decide what the important components would be, we thought about what would make a successful self-automated garden. We figured out that a moisture sensor would be important because that is what will sense when the valve for the water will need to open. We also decide that it would be important to have fertilizer for the plants that can be easily distributed.



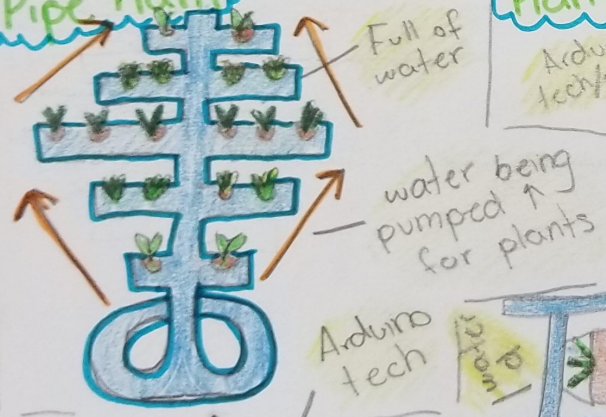
Side view Plant Drawer Front View



The Wheel



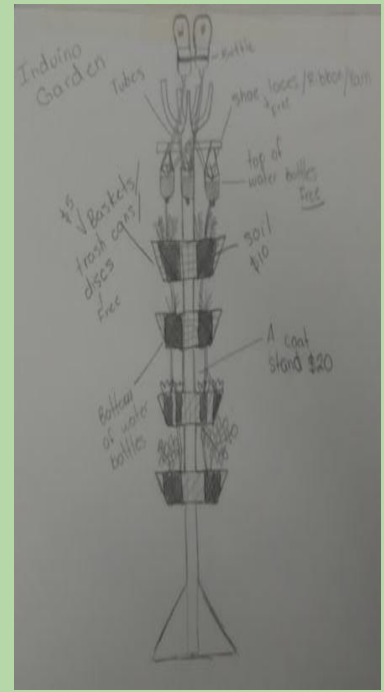
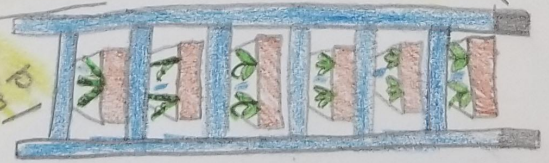
Pipe Plant



Chair Plant



stairs



SOLUTION REQUIREMENTS AND GOALS

Minimum:

- Cheap, recycled materials
- Vertical design
- Self-automated watering system
- Space for at least 10 plants

Realistic:

- Self-automated fertilizing system
- Pretty
- Space for at least 15 plants
- Mobile

Reach:

- LCD Screen
- Ph Sensor
- Temperature and Humidity Sensor
- Growing light

TEAM ROLES

- Mechanical - Ana
 - Setting up tubing system
 - Placing plants and base
- Electrical - Annabelle
 - Power
 - Plug into wall
 - Battery for Arduino
 - Electric Components
 - Solenoid Valves
 - Moisture Sensor
- Programming - Emma
 - Building Structure
 - Making Pots

TECHNIQUES AND TOOLS

- Drill
- Soldering iron
 - Soldering
- Scissors
- Hot glue gun
- Duct tape
- Hammer
- Super glue

PHOTOS:



FINAL PRODUCT:

- Mobile
- self automated watering system
- 15 plants
- recycled materials



CHALLENGES:

Mobility-making sure it was easy to put in a car and taking it somewhere or moving it around the house too. We needed to make it so we could detach the plants from its base.

Leakage- making sure the tubes did not leak any water or fertilizer took us more than a whole day!!

Base- making sure this 7 foot tall structure can stand up straight by itself was also challenging and we used a christmas tree base!

Sensors- in the beginning the moisture and solenoid valve were hard to manipulate but we finally made it happen!

FUTURE IMPROVEMENT

If we had more time and money, we could have added more sensors, such as a humidity and temperature sensor and a ph sensor. The humidity and temperature could have been displayed on an LCD screen. Instead of having a button that must be pressed to open the solenoid valve for the fertilizer, the ph sensor could have sensed when the plants needed to be fertilized. If we had more resources we could have made the structure out of wood instead of cardboard. We also could have made a sturdier base. While we were working on our project we realized that we could have had a timer for the fertilizer.

THINGS WE LEARNED

During the project, we learned that during the invention process, you can go through many different designs before deciding on the final design. And that when working in groups, you can work together to figure out answers to problems and new ways to improve your inventions.

Something I would approach differently now that I've been to camp is the invention process. And that it's okay for your final design to be different from your first idea.

Q&A

Any Questions?