

Design Criteria and Target Specifications

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Prioritized Design Features

Redesign Lighting System:

- Brighter lights, possibly LED.
- Must be within price range, HID lights are much too expensive.
- Plants must grow effectively within heat and light conditions.

Portability and Size:

- Easily moved around the classroom.
- Fit in smaller elevators.
- Small enough for young children to easily use.
- Use its space efficiently, does not get in the way of everyday tasks in the classroom.

Reservoir:

- Way to see water level easily.
- Some way to indicate the user.

Branding:

- Place to show the brand name effectively.
- Logo that won't be covered by plant growth.

Design Focus and Benchmarking

Lighting system

The lighting system has been identified as a major upgrade to the existing system. The customer wants brighter, more efficient lights that provide sufficient light to the plants. The lighting must not get too hot and must be waterproof. Plants grow optimally within 18 to 24 degrees celsius. They also need between 4000k to 6000k type lights. LED lighting is a reliable and efficient source that has become popular on hydroponics systems.

Portability

Hydroponics systems are large and usually heavy systems. The customer expressed a redesign of how the system will be moved around and the overall size specifications. The current systems are too tall for younger children to reach plants that are growing near the top. The systems also do not fit very well in elevators or cars. The current systems are fully functioning, all-in-one system. All the pieces are connected together in some way. One system is wall mounted with removable growing channels that are quite heavy. The others are grow towers that look similar to a tall cylinder. These systems should be on wheels with locks, it would be much easier to move around classrooms. The wall mounted system is about 5 feet tall and about 2 feet off the ground. The system is overall about 7 feet off the ground.

Branding

The company which provides the children with these systems has requested branding the system in a way which grabs the attention of onlookers. They would also like the branding to be easily seen and not covered by plants. The Growing futures logo is green and white, the same color as the hydroponics. To make the branding eye catching the logo should be large enough that is easily read and seen but not get in the way.

Reservoir

The current hydroponics systems do not allow for the consumer to see water levels. The customer must look through a hole at the top of the reservoir. The customer has also asked for some way of being indicated the reservoir needs to be filled. This means we need a sensor and