Elizabeth's Project Description

I learned to never give up even though my project provided many obstacles. I built a robot, dismantling and redesigning it several times. Elderly and disabled people may experience difficulties with simple tasks such as getting up to turn off lights. To solve this problem, I designed and built a robot that would perform this job for them, simply by turning on the robot and allowing it to do its work. One original idea involved a lever connected to the lamp's on-off switch that the robot would push, turning out the lights. My robot was not strong enough to push the lever. After repeatedly redesigning my lever, I switched course. I attached a touch sensor to the lamp; when the robot touched the sensor, it would activate the sensor, turning out the lights. The robot had too little mass to activate the sensor; it was unsuccessful. I created a Lego "pusher" placed at the lamp's neck. If a gear turned, the pusher would move forward and push the light switch off. I built a gear train reaching up to the pusher; I planned for the robot to push a spinning gear into place. The gears leading up the lamp would spin causing the pusher to do its job. Unfortunately, the Legos were not strong enough to support the heavy gears; they kept snapping. My final decision was to make a special lamp where my robot would run into a wire at the lamp base, knock it loose, disconnect the circuit, and turn out the lights. I desperately wanted to quit during my redesigning process, but my stubbornness won out. I never give up, no matter how much time it takes or how much effort I must exert.

1. Consider Purpose

Elizabeth states an explicit goal with real-world connections.

2. Visualize

Elizabeth *imagined* a robot that could perform the task she wished.

3. Generate Multiple Ideas

Elizabeth knew from the start of her project that she might have to try several designs.

4. Design and Redesign

Elizabeth tried a number of different avenues to make her idea a reality.

5. Commit

Elizabeth could have given up and simply presented a working robot as her project, but she stuck with her idea and saw it through.