Assistive Lunch Tray Device

Overview

Lydia Swatsworth was born without arms, but has overcome her difficulties using her feet and fused appendages. One obstacle she has yet to conquer is holding her lunch tray without assistance. The goal of this project is to design and construct two lunch tray carrying devices for Lydia. The device must be lightweight, portable, durable, easy to clean and fit trays of different sizes.

Objectives

The project objectives were defined through the customer needs given by Lydia’s care team which are her mother, physical therapist, school special education teacher, and two of her care aids that help her daily during school. The team’s goal was to create an assistive lunch tray device that would be simple to use and fulfill the above criteria.

Approach

- The team met with Lydia and members of her care team at the first site visit to learn her needs.
- The team developed different concepts and chose two primary concepts that have the most potential.
- The team built an Alpha Prototype out of Aluminum and tested it on Lydia during the second site visit.
- The team redesigned the device with the feedback they obtained and ordered all the required materials to build two assistive devices.
- A third site visit was made to test the device after building the first of the two required assistive devices.
- The first device was completed but the second device failed the quality control test.

Outcomes

The team successfully created a device that allows her to carry her school’s lunch tray and trays from any fast food joint independently.

- The device allows Lydia to transport her lunch tray from the cafeteria to the table easily and safely
- This device is lightweight, easy to use, easy to clean and durable.
- The cost of manufacturing a single device is $370
- Only one device instead of two was given to the sponsor as the second device failed one of the quality control tests.