

# Team Orange

## Faith

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### Introduction/Background

Go Baby Go! is a community-based internship program that aims to bolster independence for children with disabilities by creating low-cost, adaptive mobility equipment that is tailored to a child's specific needs through the modification of electric ride-on cars. Mobile independence is vital for childhood development, as it enhances a child's ability to explore on their own, develop critical motor skills, socialize, and play with family and friends. Students work closely with medical professionals – physical/occupational therapists and pediatricians – professors, and parents to ensure all of the child's needs and accommodations are met during the modification process. Our client, Faith, is diagnosed with down syndrome and has full mobility, so our main focus was her safety and enjoyment of the vehicle.

### Process

- Client Research:**  
We read through our client file to determine important topics of interest pertaining to Faith's age, diagnosis, and physical therapist's notes in order to guide our group's research into the necessary accommodations to ensure the safety of a child with down syndrome.
- Parent Interview:**  
The parent interview provided us with great insights into who Faith is as a person by giving us a better idea about her likes and interests, as well as giving us an opportunity to verify whether or not there are necessary physical accommodations that must be made to support Faith.
- Design & Modification Brainstorming:**  
After becoming well acquainted with Faith's personality and needs, we came to the conclusion that the most important aspects of Faith's vehicle were safety modifications and an aesthetically pleasing design based on Faith's love of Minnie Mouse.
- Modifications and Testing:**  
Using the sanctioned material list, we constructed supports, rewired the acceleration controls, wired emergency power shut-off, 3D printed accessories, and printed stickers. All of which was followed by inspections of proper wiring and testing of stability.
- Delivery:**  
Meeting the family and letting Faith test drive the vehicle allowed us to make final determinations about the necessary quality-of-life changes and minor support modifications.



### Objective

The objective of our process and build is to assess Faith's needs and likes through an interview with her parents along with the guidance of her physical therapist, to which we brainstorm designs that coincide with the information we gathered, and finally implement the brainstormed accommodations, adapting the modifications if the original ideas were unfeasible for our specific case.

### Modifications

- **Structural/Operational:**
  - PVC Back support with cushioning back/head cushioning that has dual axis arm-supports/side cushions
  - 5-point harness fastened to both the seat and back support
  - Large accessibility button fastened to the steering wheel used for acceleration, which replaced the function of the pedal
  - Emergency power switch on rear of vehicle stop battery operations by creating an open-circuit
  - A sunshade was attached to the back support with an articulating arm and clamps. We constructed a holder for the sunshade out of PVC pipe and foam to ensure stability and effective clamp force.
- **Design Choices:**
  - The car's theme was based a combination of Minnie Mouse and the Mickey Mouse Clubhouse.
  - Designed, 3D printed, and painted a Minnie Mouse silhouette with Faith's name on it.
  - Attached automatic lights and magnets to the doors that project an image of Minnie Mouse when the doors open.
  - Designed, printed, and attached stickers that support the theme of the car.
  - Downloaded Faith's favorite songs onto a USB flash drive to listen while driving



### Technical Information

#### Toggle Switch

The purpose of the toggle switch is to implement a safety mechanism to control the flow of electricity in a circuit. Having the toggle switch off opens the circuit, cutting the flow of the electrical current.

#### Big Red Button

The big red button serves as the gas pedal. Pressing the button closes the electrical circuit which allows the car to accelerate and releasing the button opens the circuit, keeping the car's motor from spinning the wheels.



Before:



After:



### Conclusion

In conclusion, after finalizing the structure, design, and support the toy car required, we were grateful and privileged to see the smile on Faith with her excitement of getting to ride her customized car. We all enjoyed the process immensely, of not only interacting with Faith and her parents but also getting to learn from the great minds of our mentors and professors.

### Acknowledgements

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