

Fast and Furious Progress Presentation



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Problem Statement

We need to develop a safe mobility solution targeting physically impaired children whose cognitive and physical development are being compromised by disability. We are helping children at High Hopes Preschool develop confidence and independence by supporting their needs and mitigating physical restrictions.

Performance Criteria

Constraints: All children using our product must be between the ages of 2 and 5 years and be a student at High Hopes Preschool.

Limitations: Our main limitations are time and extent of disability for each child. The project must be completed within 4 months, and we are realistically unable cover all unique physical needs that can be met with a modification.

Exclusions: Our product is only suitable for children under 5 years of age.

Primary Objective

Mainly, we seek to help the children gain individual control of their mobility. Simply granting them the ability to move about on their own will help them with:

- Conceptualization of cause and effect
- Depth perception
- Cognitive development
- Social development

Solution Description

A power wheels car (6-V battery powered ride-on) with modular components and attachments which will support a variety of conditions. Our car is suited for children younger than 5 years and will have:

1. Safety Features
 - a. Head and back straps, foam padding, postural supports, parent remote switch
2. Plug and Play Inputs
 - a. Button to accelerate, steering wheel, handle bars, touch controls
3. Motivational Appeals
 - a. Colored inputs, music, lighting

Goals

Mobility impaired children suffer from a variety of conditions, but their cognitive and social development is also affected.

Our product will address:

- Independent Mobility
- Cognitive Development
- Fun
- Safety

Factors

- Cost of parts
- Number of observations
- Variety of modifications
- Types of disabilities
- Social, cognitive, and mobility benefits

Performance Metrics

Once we start putting parts in the car we will be able to quantify the our modifications in terms of measurements, costs, benefits.

As of now we have measurements for the car itself and some of the children that we have observed.

Informal Observations

After meeting with patients at 100 Oaks Pediatric Rehabilitation Center and watching Youtube videos we found that children appear to be more motivated to move when presented with a stimulating way to do so such as a reward of colors, lights, or music.



Keagan

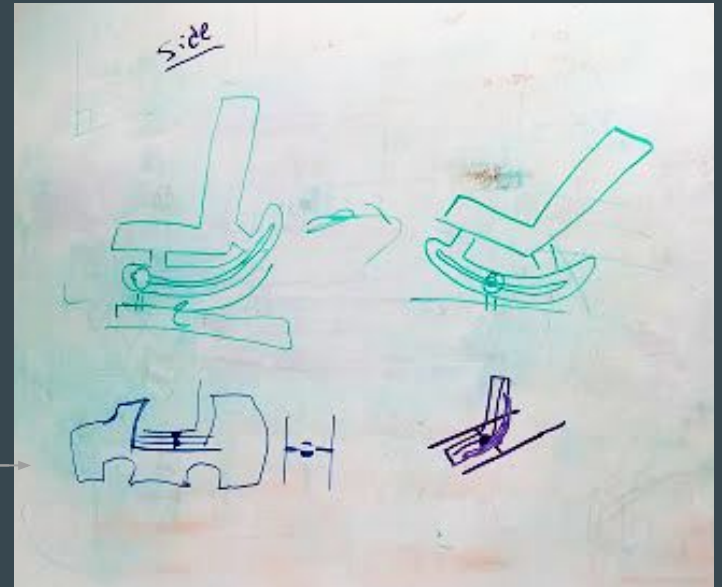
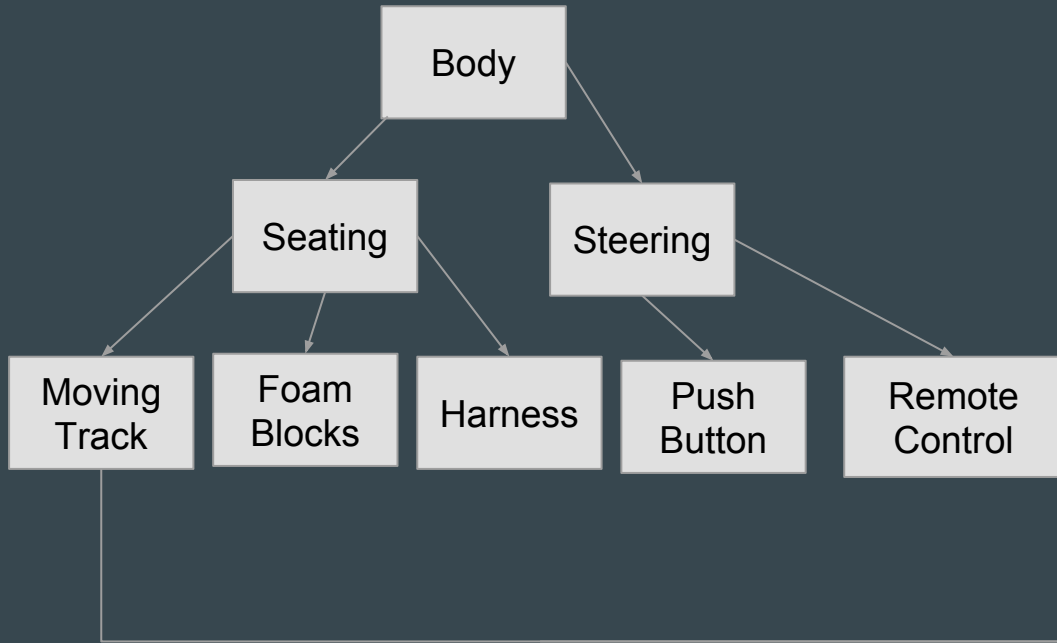


Luke



Clayton

Experiment Block Diagram



Performance

Expected	Actual
Sliding Track for Seat	
Head Strap w/ Padding	
Movable Button With Ability to Plug into Head Rest, Steering Wheel, Arm Rests, and Horizontal Steer Bar	
Foam Inserts for Leg Support/Hip Alignment of Different Widths Attached with Velcro	
Buttons that Stimulate Motivation with Music and Color	
Add motor controller to reduce acceleration jolt	
GUI for Children's Measurements and Impairments	

Expected Conclusions

We are expecting our product to improve the lives and mental well-being of mobility impaired children while also helping to rehabilitate them and motivate them to move more independently. We also expect our project to aid in the cognitive development of mobility impaired children.