Ice Cube

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Agenda

- Background: Who? What? How? Why?
- Benchmarking: Other Designs
- Constraints: Specifications
- Our Design: First Prototype
- Project Plan (Gantt)
- Conclusion

Background

- Liam’s disability is caused by a third replication of the ninth chromosome.
- He has hyperflexibility in his hips and hypotonia.
- Liam has always wanted to skate down the Rideau Canal and his dad has yet to come up with a sufficient solution, so therefore our groups task is to design and build a support that allows Liam to Skate down the Canal with his dad without risk of injury to either of them.

Benchmarking

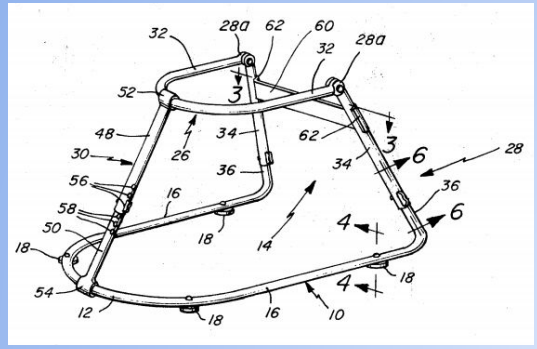


figure 1

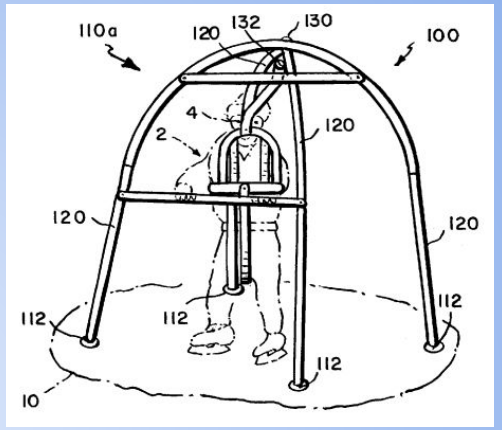


figure 2

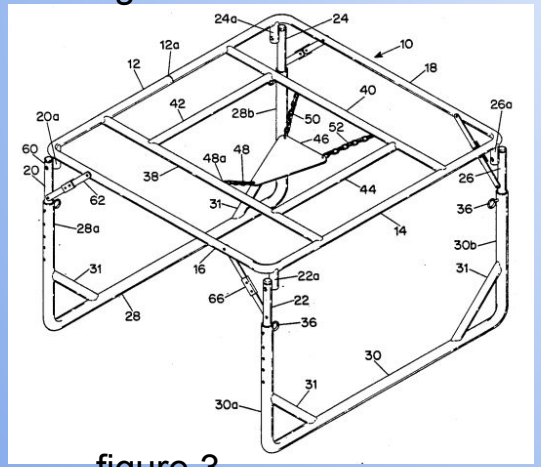


figure 3

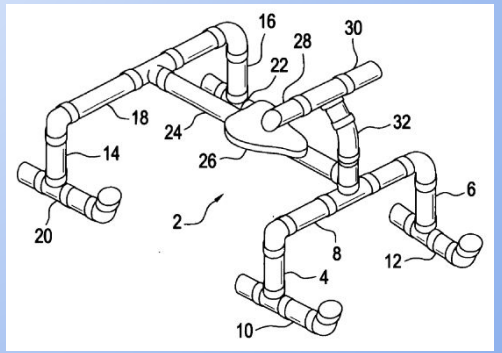
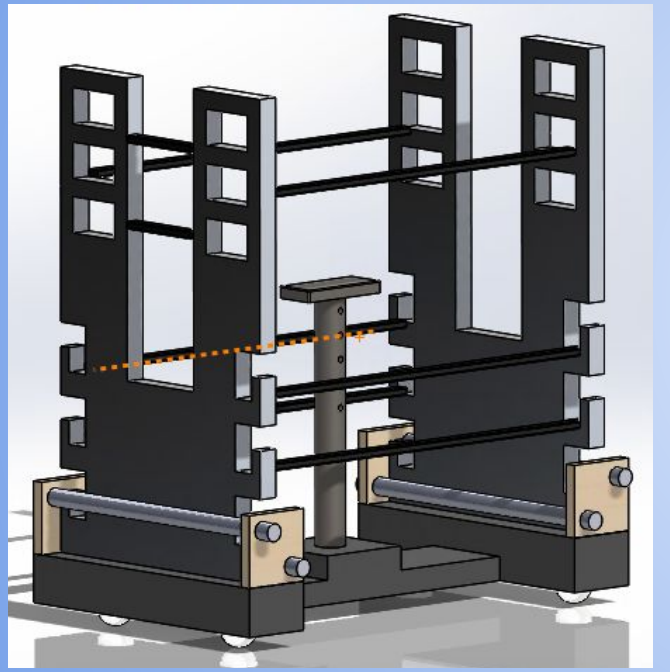


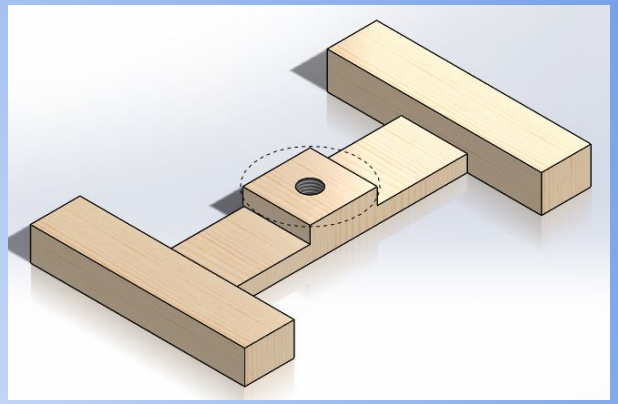
figure 4

Constraints

- Weight between 15 - 20 pounds
- The height of the seat, side supports, and handles should be adjustable
- Able to fit in the trunk of a small car (41 inches x 35 inches x 18 inches)
- 360 Support

Design





- Base
- Ice Wheels
- Transverse Bars
- Front and Back Panels
- Side Supports and Ankle Guards
- Seat
- Transportation
- Materials
- Cool Factor

Client Feedback

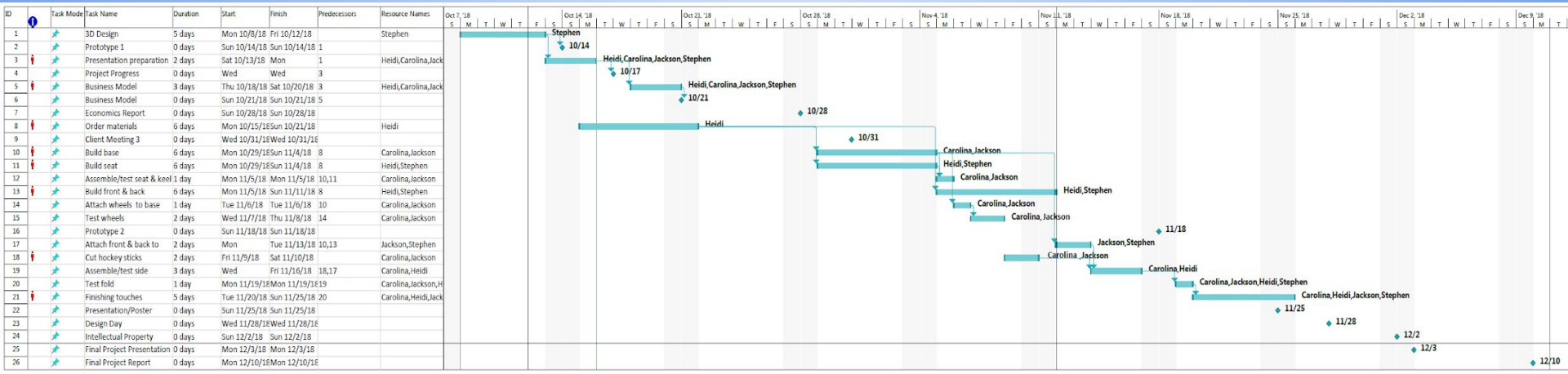
Skeptics

- Seat
- Previous ankle guards
- Materials

Contents

- Ice wheels
- Gear shifts
- Handle supports
- Transportation
- Cool factor
- Cost Minimize
- Overall Design

Project Plan



ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors	Resource Names
1		3D Design	5 days	Mon 10/8/18	Fri 10/12/18		Stephen
2		Prototype 1	0 days	Sun 10/14/18	Sun 10/14/18	1	
3		Presentation preparation	2 days	Sat 10/13/18	Mon	1	Heidi,Carolina,Jack
4		Project Progress	0 days	Wed	Wed	3	
5		Business Model	3 days	Thu 10/18/18	Sat 10/20/18	3	Heidi,Carolina,Jack
6		Business Model	0 days	Sun 10/21/18	Sun 10/21/18	5	
7		Economics Report	0 days	Sun 10/28/18	Sun 10/28/18		
8		Order materials	6 days	Mon 10/15/18	Sun 10/21/18		Heidi
9		Client Meeting 3	0 days	Wed 10/31/18	Wed 10/31/18		
10		Build base	6 days	Mon 10/29/18	Sun 11/4/18	8	Carolina,Jackson
11		Build seat	6 days	Mon 10/29/18	Sun 11/4/18	8	Heidi,Stephen
12		Assemble/test seat & keel	1 day	Mon 11/5/18	Mon 11/5/18	10,11	Carolina,Jackson
13		Build front & back	6 days	Mon 11/5/18	Sun 11/11/18	8	Heidi,Stephen
14		Attach wheels to base	1 day	Tue 11/6/18	Tue 11/6/18	10	Carolina,Jackson
15		Test wheels	2 days	Wed 11/7/18	Thu 11/8/18	14	Carolina,Jackson
16		Prototype 2	0 days	Sun 11/18/18	Sun 11/18/18		
17		Attach front & back to	2 days	Mon	Tue 11/13/18	10,13	Jackson,Stephen
18		Cut hockey sticks	2 days	Fri 11/9/18	Sat 11/10/18		Carolina,Jackson
19		Assemble/test side	3 days	Wed	Fri 11/16/18	18,17	Carolina,Heidi
20		Test fold	1 day	Mon 11/19/18	Mon 11/19/18	19	Carolina,Jackson,H
21		Finishing touches	5 days	Tue 11/20/18	Sun 11/25/18	20	Carolina,Heidi,Jack
22		Presentation/Poster	0 days	Sun 11/25/18	Sun 11/25/18		
23		Design Day	0 days	Wed 11/28/18	Wed 11/28/18		
24		Intellectual Property	0 days	Sun 12/2/18	Sun 12/2/18		
25		Final Project Presentation	0 days	Mon 12/3/18	Mon 12/3/18		
26		Final Project Report	0 days	Mon 12/10/18	Mon 12/10/18		

Plan for Development

1. Order Materials by October 19th
2. Make the base and seat
3. Test!
4. Make front and back panels
5. Attach base to sides
6. Add wheels, cup holder, 3D printed parts
7. Test!!
8. Make changes from results of testing
9. Provide an effective product on time!!!

Conclusion

- We have analyzed different designs to help us generate a product that we believe can best solve Liam’s problem
- We have guidelines for measurements that we intend to follow when choosing our length, width, height, and material
- Overall David is happy with the ideas we have come up with
- Moving forward we are going to show David the prototype we have made, start ordering the materials, start building the final product, and test the parts/product