WHEELCHAIR FOR ABBY MILLER

Final Presentation

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Overview

- Client Information
- Client Needs, Purpose
- Previous Work and Goals
- Progress
- Purchases and Budget
- Future Work
- Conclusion
The Miller Family
Clinton, Illinois
Abby Miller
Age: 17
Height: 5’2”
Weight: 72 lbs
Cerebral Palsy

- Characterized by disorders involving the nervous system and can affect functions such as movement and posture.

- Symptoms: tight muscles, muscle weakness and an abnormal gait.

- Caused by abnormal development or damage to the part of the brain responsible for control of muscle tone and motor activities.
Abby

- Weakness of left and right sides of body
- Leans to left side so her back is left unsupported
- Exaggerated tone throughout body- frequently tries to stand up
  - Abby tends to push through the materials on her current chair
- Weakness in both arms, head and neck
The Miller Family would like a more comfortable wheelchair for their 17 year old daughter, Abby.

Preferences:

- Purple
- Non-pneumatic, removable tires
- Manual features, not electronic
- Tilt-in-Space feature
- Thick padding to prevent Abby from pushing through due to her exaggerated tone
- More customized design
Previous Work and Goals
Currently on the Market

- **Karman Healthcare**
  - Folding tilt in space wheelchair
  - Price: $1,699.00.
  - Drawbacks:
    - Wheels are only 14 inches which is pretty small
    - The seat cushions and headrest needs to be customized for anyone who wants to use it.

- **Quickie**
  - Price: $2,825.00
  - Drawbacks:
    - Needs a lot of customizing to make it comfortable for any user.
    - Has anti-tip bars on the back which prevents the wheelchair from tipping backwards when going up ramps and other obstacles.
Goals

- Better neck support
- Contoured seat
- Uniform foot rest
- Tilt in space feature
- More safety belts
Progress
Wheelchair Donations

- Shorey Family
  - Ashland, MA
  - Sarah - 22 year old woman with Spina Bifida
  - Donated traditional Quickie wheelchair
  - Suggested we incorporate inflatable bladders and splash guards
  - Visited with family October 23, 2010
Wheelchair Donations

- NEAT Marketplace
  - Hartford, CT
  - Donated Quickie Tilt-in-Space wheelchair
  - Visited NEAT November 10, 2010
Progress

- Consistent email and Skype contact with Miller Family
- Received donated wheelchairs
- Received Abby’s old headrest in mail and videos of her limitations and wheelchair
- Cleaned and disassembled Tilt-in-Space chair
- Fixed Tilt-in-Space mechanism cables
- Expanded chassis to 18”
- Visited with NEAT marketplace for extra parts
- Began Solidworks designs for wheelchair

- A local TV station in Illinois would like to do a story on our project
Purchases and Budget
Purchases Made

- NEAT Marketplace
  - November 10, 2010
  - Visited with Don
  - Purchased
    - Adjustable armrests for Quickie chair
    - New armrest padding
    - Headrest
    - Pieces to make headrest adjustable
    - Footrests for Quickie chair
Budget

- Allotted Budget: $1,000.00
- Currently significantly under budget
- Spent: $84.00
- Still need to purchase:
  - Seat
  - Powder Coating or Paint for Chassis
  - Harnesses
  - Accessories
- Budget Remaining: $916.00
Future Work
Future Work

- Continue working with Solid Works design.
- Contact Miller Family via Skype and update them on our progress.
- Clean and re-paint chassis to client’s favorite color, purple.
- Attach new armrests, footrests, harness and other features to wheelchair.
- Purchase seat, padding, inflatable bladders, harnesses and miscellaneous accessories.
- Incorporate inflatable bladders into seat to provide maximum support and comfort for Abby.
Conclusion

- Customize a Tilt-in-Space wheelchair to Abby’s specific weaknesses due to cerebral palsy

- Maximize comfort and safety while maintaining freedom and functionality for both Abby and her parents
Acknowledgements

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- The Shorey Family
Questions?