

Modifying a Comb to Create Independence

Putting the Self in Self-Care



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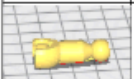



Overview

- Family is the core unit that shapes one's identity, fostering empathy and commitment to easing their lives.
- Imani and Madison Quarterman expressed that their mother assists their grandmother with her hair due to mobility issues, giving us our idea.
- Current products only help a small part of the broader need.
- We developed a hinge device with hairbrush bristles designed to pass through hair.
- We gained valuable insights, learning how to assemble prototypes, the needs of elderly, and angles that work best for mobility.

Research

- Mobility limitations affect 35% of people from ages 70+(Freiberger, 2020).
- Arthritis is in 54% of adults 75+ (Nazik Elgaddal, M.S., 2024). Parkinson's disease is in 90,000 people annually (Parkinson's Foundation, 2018).

Budget

Piece	Weight (Grams)	Length (Meters)	Price	Notes
	18 g	6.03 m	\$0.29	9 pieces, the end caps is just one cut in half
	19 g	6.47 m	\$0.30	
	54 g	18.18 m	\$0.86	
	47 g	15.69 m	\$0.75	In testing, found out that this might be an unnecessary piece
Combs	n/a	n/a	\$3.50	4 pack of combs for \$7, makes each comb \$1.75. We used 2.
Epoxy	n/a	n/a	\$6.54	
		Total	\$12.24	

Ask: As a group we brainstormed several ideas and decided to focus on the elderly/groups with limited mobility. The comb idea stemmed from

Good Shepherd

- We spoke with occupational therapist Kendra Chuss.
- During our meeting, she expressed her thoughts regarding our product.
- She gave us insight on certain modifications that will make our product suitable for all patients.
- Complimenting its versatility, she emphasized the flexibility of our product and the multiple ways to hold it.
- She also noticed its accessibility and economic feasibility.
- Finally, she recalled a patient who would love our product and mentioned the wide range of patients we will benefit.

Improve: We held a google meet with occupational therapists at Good Shepherd to get feedback/advice on our final design.

Test: There was continual testing and improvement of the encasement design. We concluded that Design 2 was the most effective prototype.

Create: We had two different designs. One with bendable elbows and another with straight 3D printed arms.

Research: We researched products that were already on the market and ergonomics to help create our prototype on TinkerCAD.

Imagine: We brainstormed the best ways to produce a device that would be different than things already on the market.

Plan: We created a prototype drafted after our drawn design. The prototype was created with recycled materials.

