

Project Motivation

Background:

- BISM provides opportunities, services, rehabilitation programs, training, and education to blind associates.

Problem:

- BISM needs canes for their rehabilitation associates; however, their current cane providers are behind on orders.

Solution:

- Create an accessible and independent cane manufacturing process.

Requirements

Cane:

- Includes a handle, shaft, and tip
- Curvature less than 0.002/in
- Weight range of 100g - 200g
- Final length within 1/8" of desired length
- Easily customizable

Manufacturing:

- Each step of the process is low-vision or fully non-visual
- Each step is easily quick, efficient, and repeatable
- Manufacturing floor is ergonomic and maximizes efficiency
- No potential safety hazards

Prototypes

- Each cane was tested by blind associates to determine which type fit all needs and preferences the best.
- **Result:** All types of canes are now available for blind associates to choose from.



From top to bottom -- Garden Stake (first 3), Bamboo (second 2), fiberglass (last 2)

Manufacturing



Quality Control Testing
Canes are passed through a 1" diameter pipe to check for straightness.



Cane Cutting
A pipe cutter is used to cut canes to a desired length (standard lengths are in 2" increments).



Filament Winding
Composite cane shafts are made with an automated winder.



Heat Shrink Tubing
Heat shrink is added to the shaft as a sealant and color option.



Tip Assembly
Aluminum chair tips are used to maximize gliding.



Handle Assembly
Handle options include rubber sports wrap, foam, and molded silicone.

Customization



Custom Braille Handles
Optional Braille phrases for molded handles



Custom Colors
Different heat shrink options for colored canes

Conclusion

The cane and manufacturing processes we designed will allow the blind associates to make customizable canes that best suit the consumer. This will help resolve BISM's shortage of canes for the associates, especially the new rehabilitation students who need a cane that works and fits them, while providing more opportunities and jobs for blind people.

User Feedback

- “So easy, a toddler could do it”
- “Perfect process”
- “This is so cool!”
- “Very enjoyable”
- “This is an awesome project”



Associates at BISM holding the new canes!

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