



Project Motivation

Requirements

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.

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.

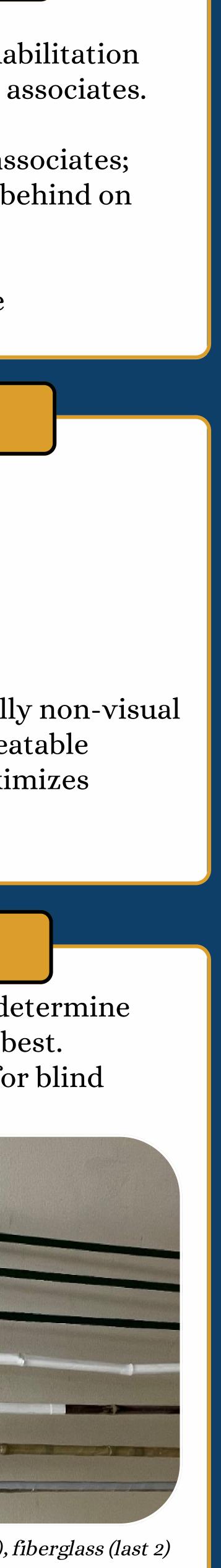


From top to bottom -- Garden Stake (first 3), Bamboo (second 2), fiberglass (last 2)

BISM23 - Blind Accessible Manufacturing

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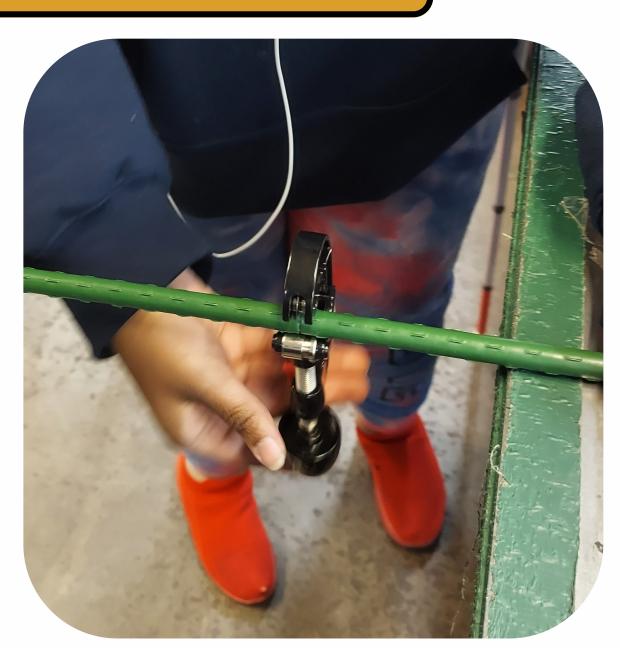
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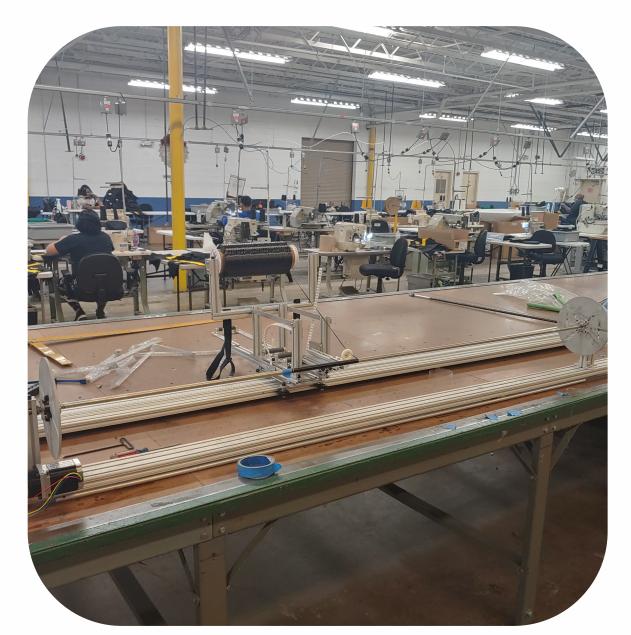


Manufacturing

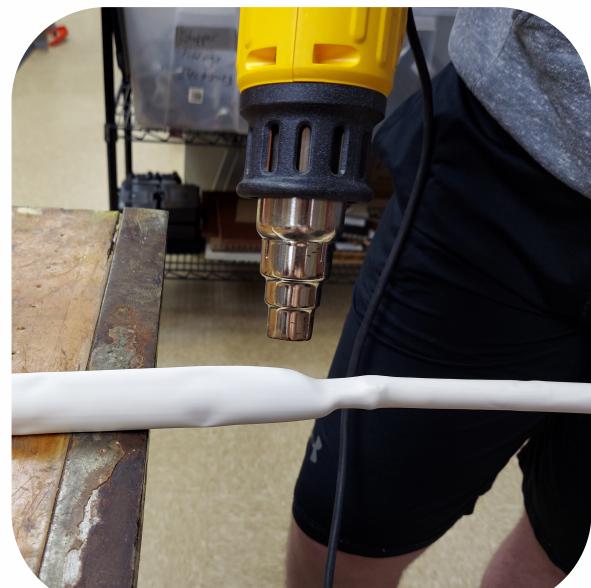








Filament Winding Composite cane shafts are made with an automated winder.





Tip Assembly Aluminum chair tips are used to maximize gliding.





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

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

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



Custom Braille Handles **Optional Braille** phrases for molded handles

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.

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



Acknowledgements

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JHU MECHANICAL ENGINEERING

Customization



Different heat shrink options for colored canes

Custom Colors

Conclusion

User Feedback