A photograph of the UC Berkeley Campanile tower at sunset. The sun is low on the horizon, creating a warm orange and yellow glow. The tower is silhouetted against the bright sky. In the background, there are mountains and a cityscape with various buildings and trees.

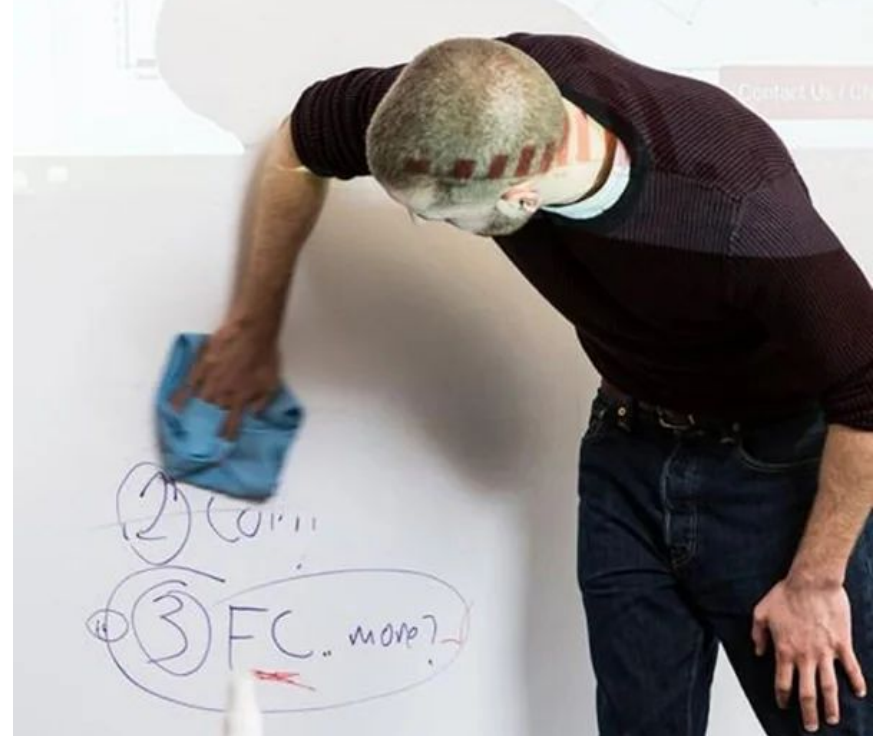
Group 105-5: GlideAssist

Tanaisha, Amisha, Allison, Alan, Kian, Abdo, Tomas

UC Berkeley

Motivation

**Increase efficiency in
classroom environments and aid
those with shoulder mobility
issues**



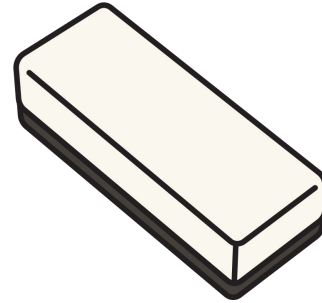
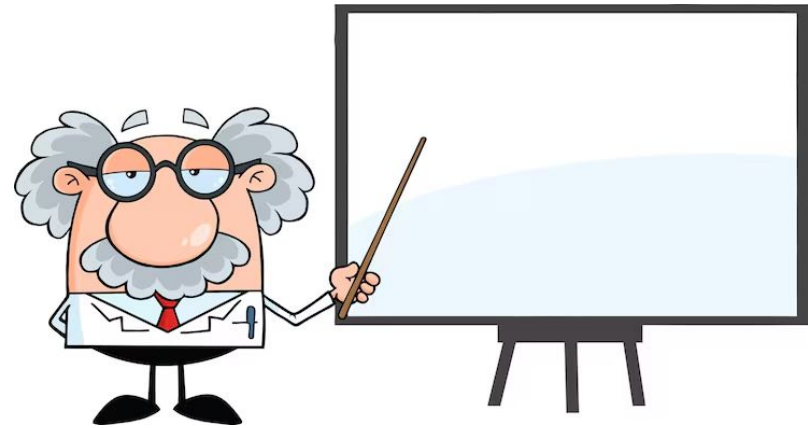
Target Market

Target Audience: schools, universities, teachers, accessibility usage

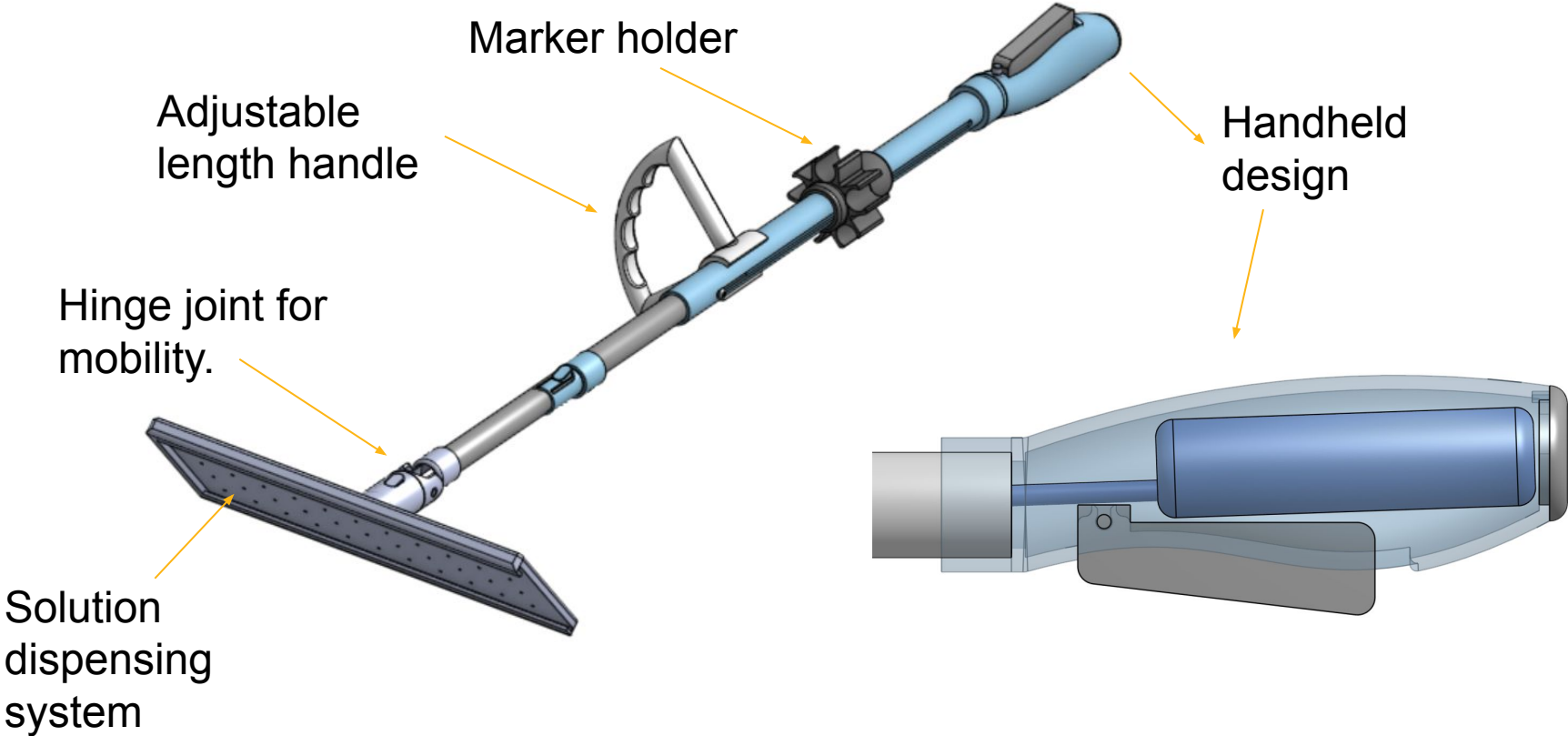
Estimate Customer Base:

- 3.8M K-12 teachers + 1.5M university faculty in the US
- 77% of teachers use whiteboards
- Assume 40% of those would realistically use our product.

Total calculation = $(5.3M)(0.77)(0.2) = 816,200$

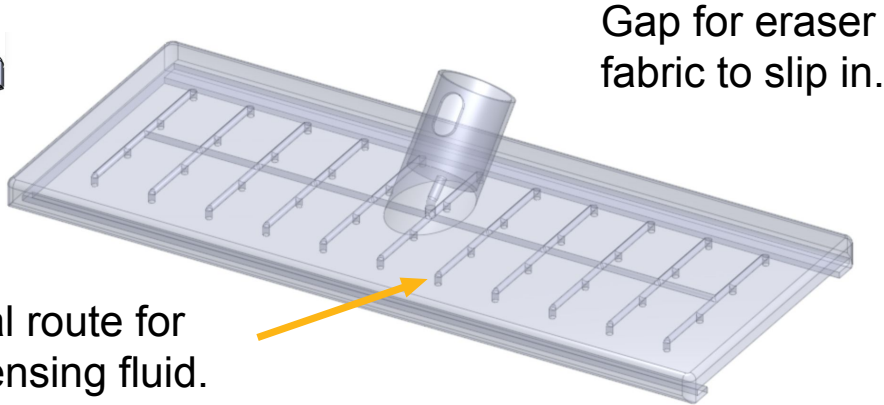
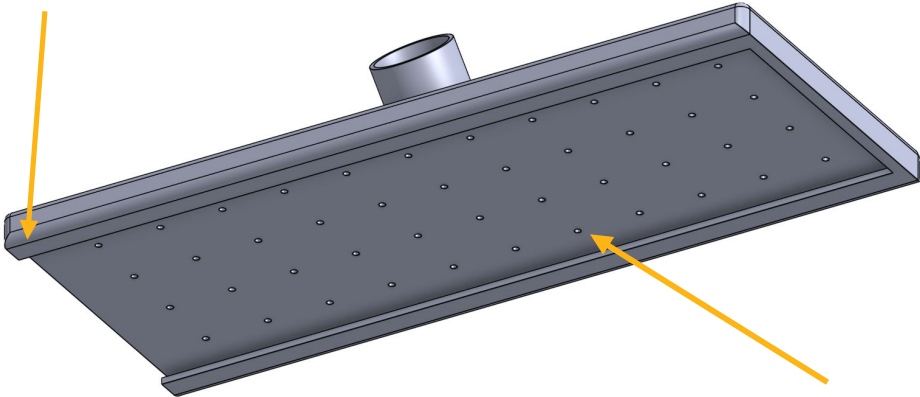
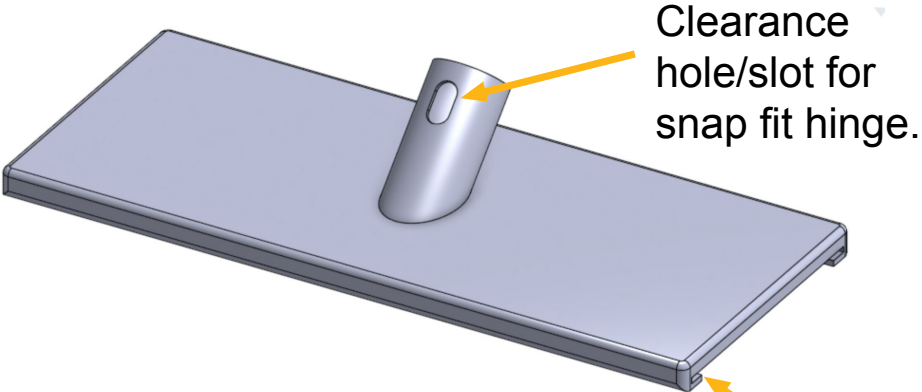


Design Decisions



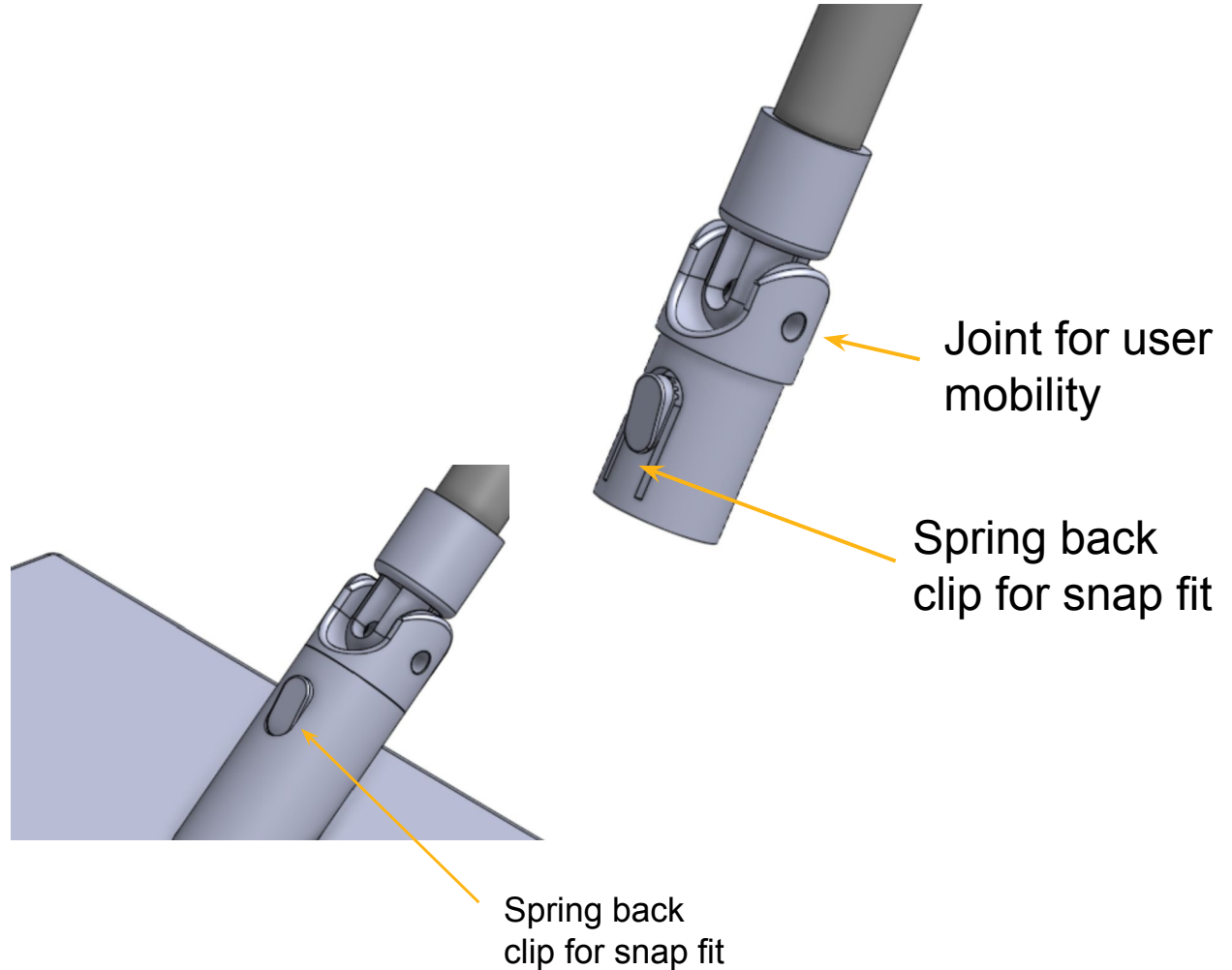
Eraser Head

Magnets on all 4 corners for improved contact when erasing white board.



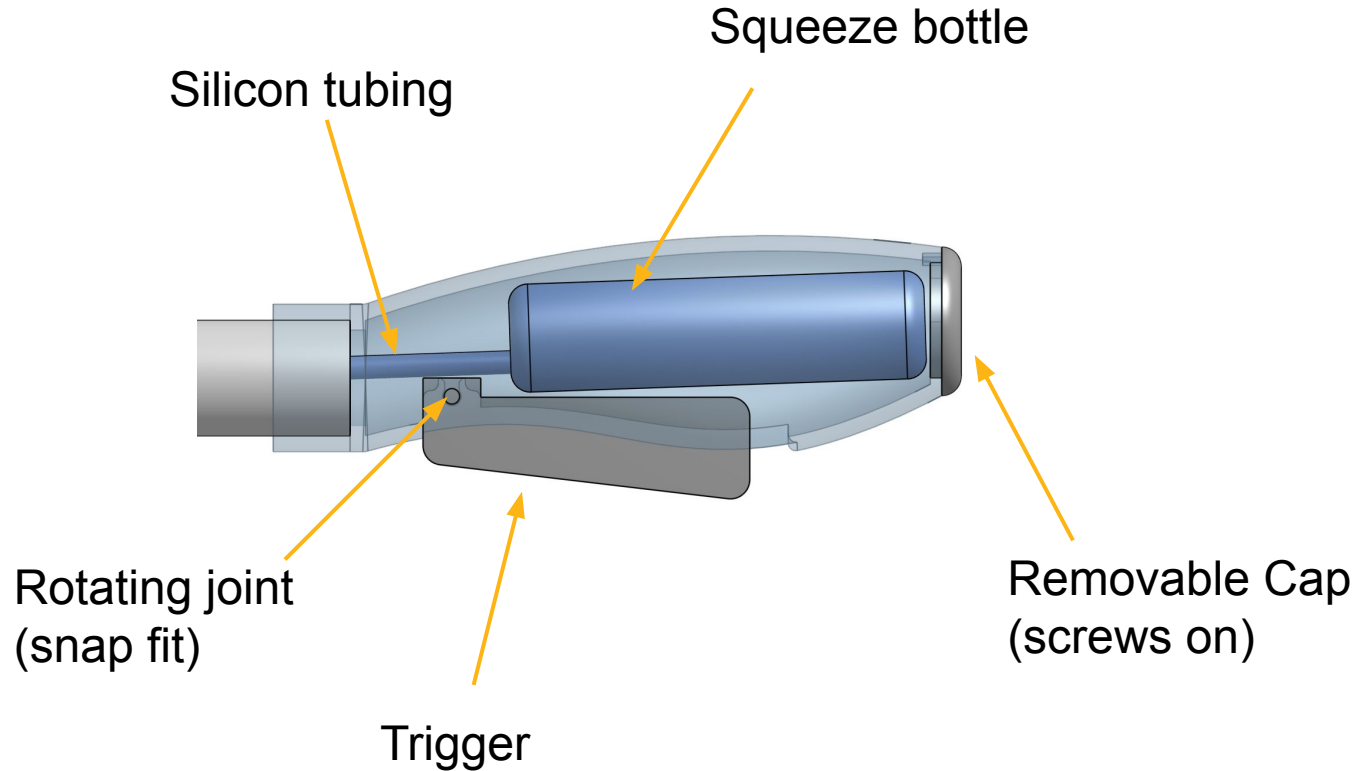
Joint Interfaces

- Spring back snap fit clip
- Joint for user mobility and ease of cleaning
- Pin slot for easy assembly and rotation
- All 3D printed using pla for prototyping



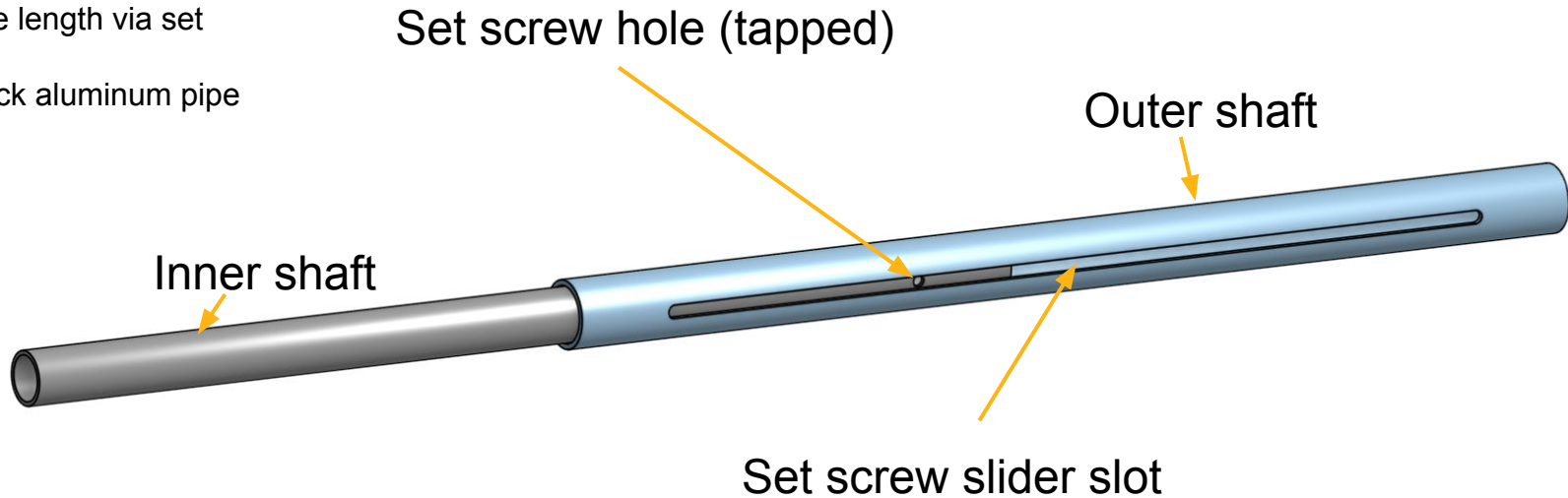
Handle

- Ergonomic handle
- Squeeze trigger to dispense solution
- Cap for easy solution refill
- All 3D printed with PLA filament due to the organic geometry and ease of prototyping
- Off the shelf bottle was bought and fitted with silicon tubing



Shaft

- 16in outer shaft with additional 15.75in extension for reaching the top of whiteboards (total 32")
- Adjustable length via set screw
- Milled stock aluminum pipe

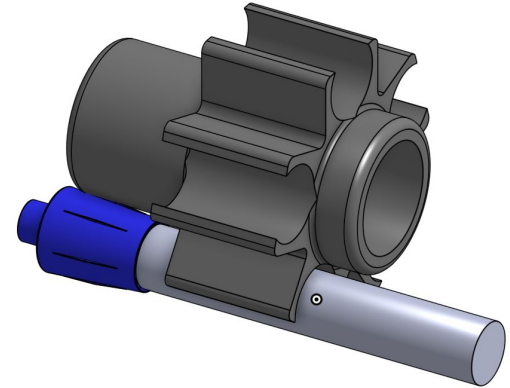
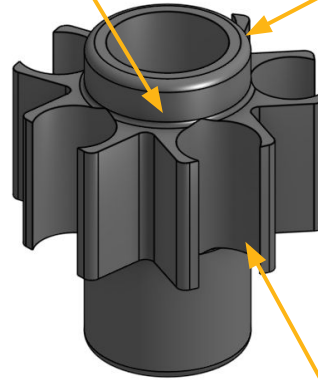


Accessories - Marker Holder

- Snap-fit slots hold up to 5 markers securely
- Filleted edges improve durability and reduce stress concentrations
- Symmetrical design balances weight around the handle
- Mounting rails allow quick attachment/removal
- Open-top layout provides easy marker access and visibility
- Fully 3D printed in PLA for lightweight rapid prototyping

Filleted Supports

Center Hub

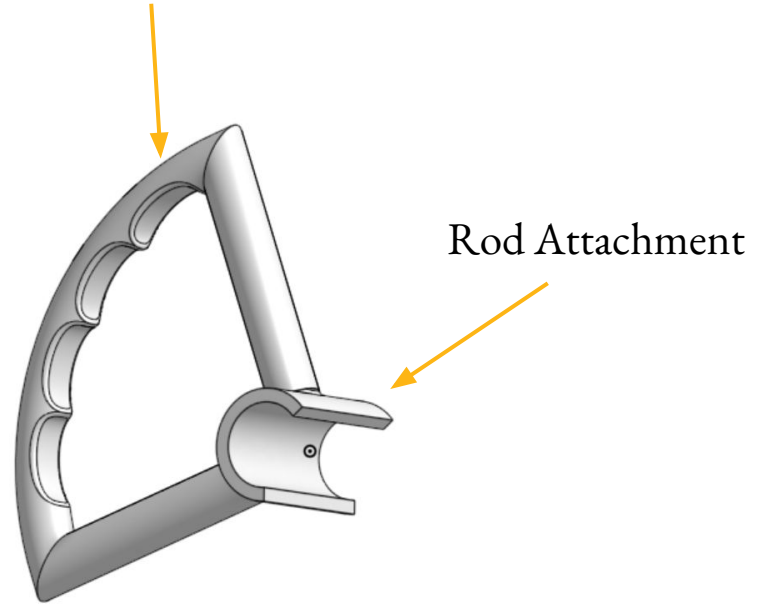


Marker Slots

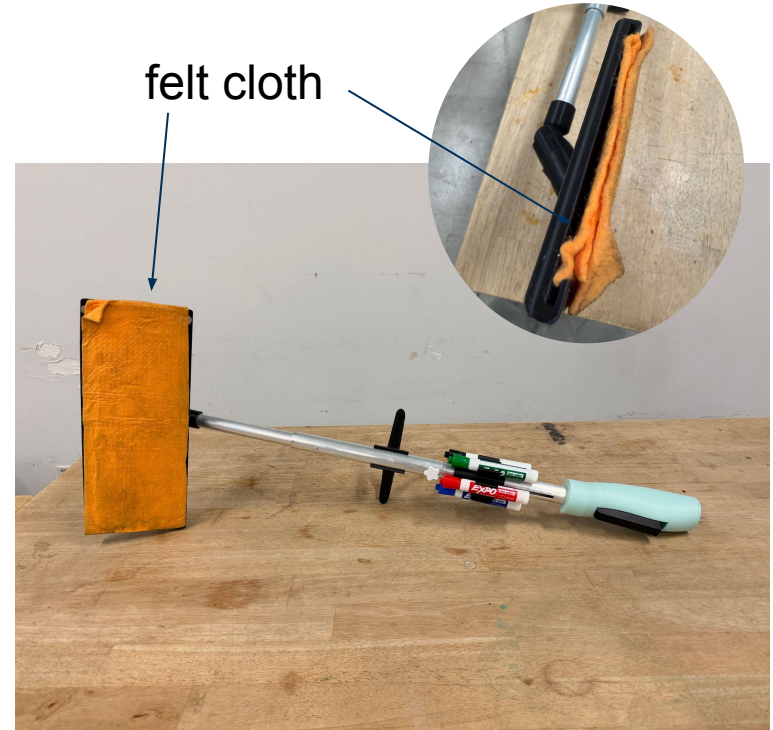
Accessories - Secondary Handle

- It features a semi-circular attachment to the eraser rod for easy customization of its position.
- Snap-fit allows for fast install and removal.
- The ergonomic finger grips make it easy to grab.

Ergonomic Grips



Physical Prototype



Future Changes

01

Prototyping

- Improve locking mechanism of telescoping handle via twist-lock or snap-fit systems
- Refine solution dispensing system for better control over flow rate to reduce leakage

02

Material Selection

- Use more durable, lightweight materials to increase lifespan of product
- Such materials include aluminum, ABS, or glass-filled nylon

03

Mass Manufacturing

- Transition from 3D printing to injection molding for plastic components
- Transition to CNC for precise components

Thank You!

