



# Accessible Door Knob Adapter

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Spring 2025

# The Problem

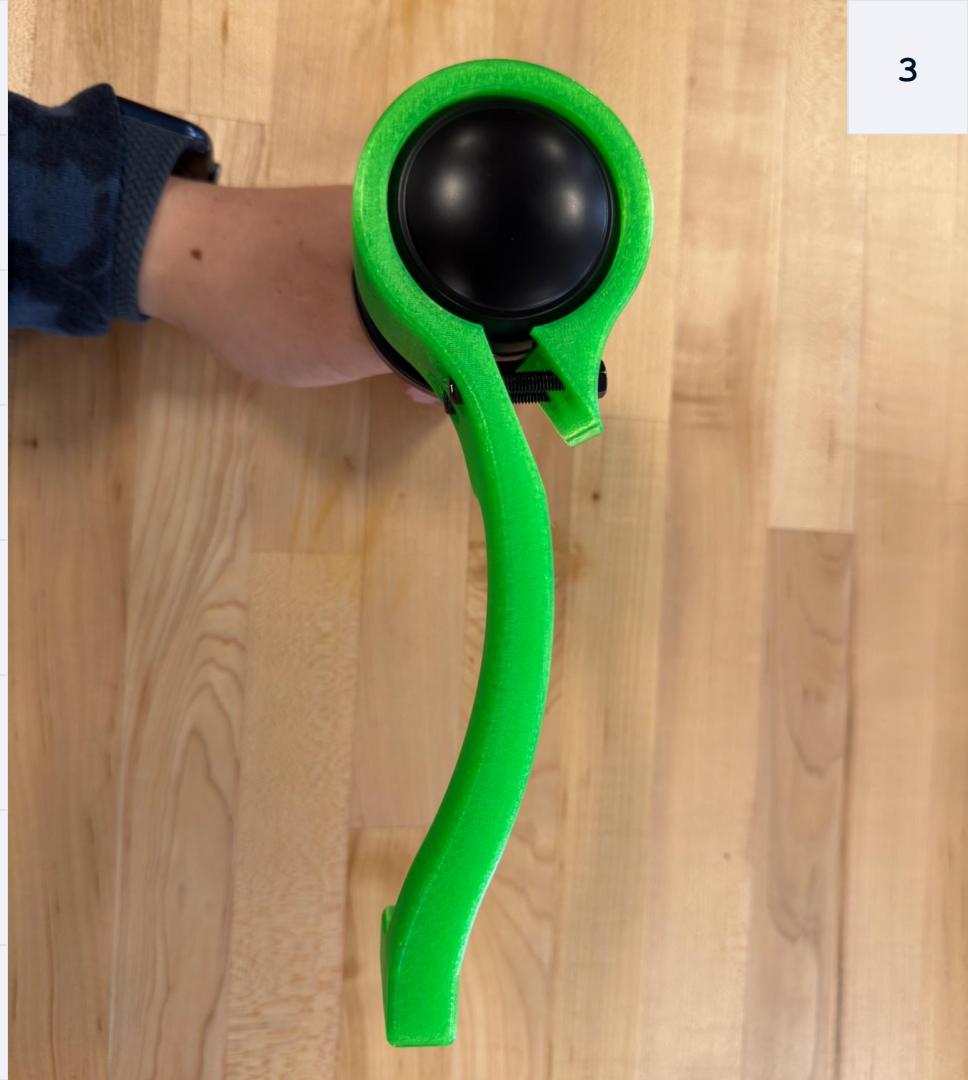
Doors with door knobs are generally less accessible than other types of doors for people with:

- Limb differences
- Arthritis
- Injuries
- Other conditions that impact grip strength and ability



# General Solution

Some way of changing an existing door knob to a different door opening mechanism



### Journey Map

- Injured students
- Pain from opening doors
- Heavy doors are worse
- Clunky brace, limits motion

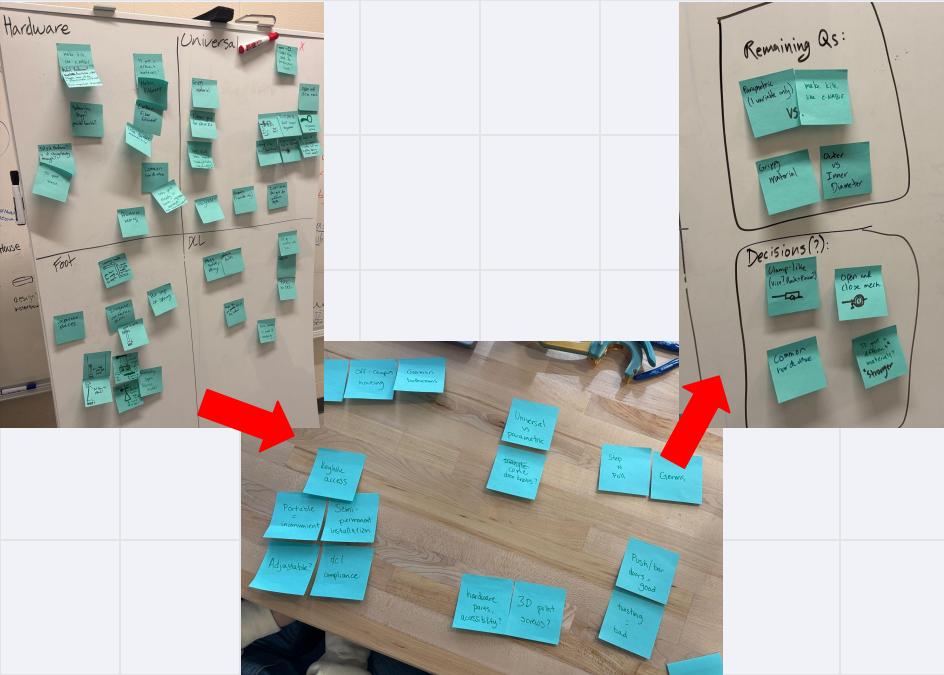
### Empathy Map

- Pain from twisting
- Use non-dominant hand/elbow
- Prefer lever/push doors
- High touch surfaces

# Customer Needs



# Brainstorm Process



Idea 1

Design by @CoEngineer  
myminifactory.com



Idea 2

Hardwareless design by  
@AnonymousHermit  
makerworld.com

# Prototypes



## Prototype 1

Initial clamp design by Ryan Colyer we found on Thingiverse.com



## Prototype 2

Same design as prototype 1 in PETG instead of PLA to improve durability



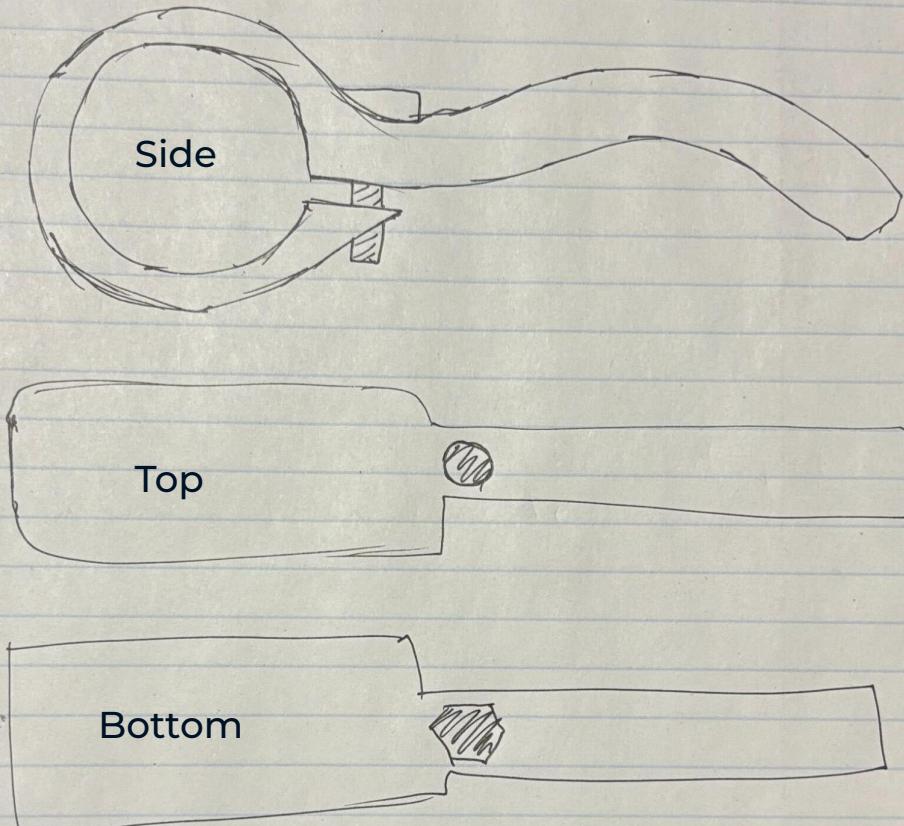
## Prototype 3

Our own modelled version based off of the Thingiverse Design, with a simpler mesh and a lip on the front edge



## Prototype 4

Prototype 3, but with an extended handle, a hooked end, and a larger lip



# Customer Feedback

## Likes

- Ergonomic handle
- Sturdy and secure
- Easily installed/fixed
- Less rotation/strength required

## Criticisms

- Not enough space between handle & door
- Comes off if you pull too hard
- Twists

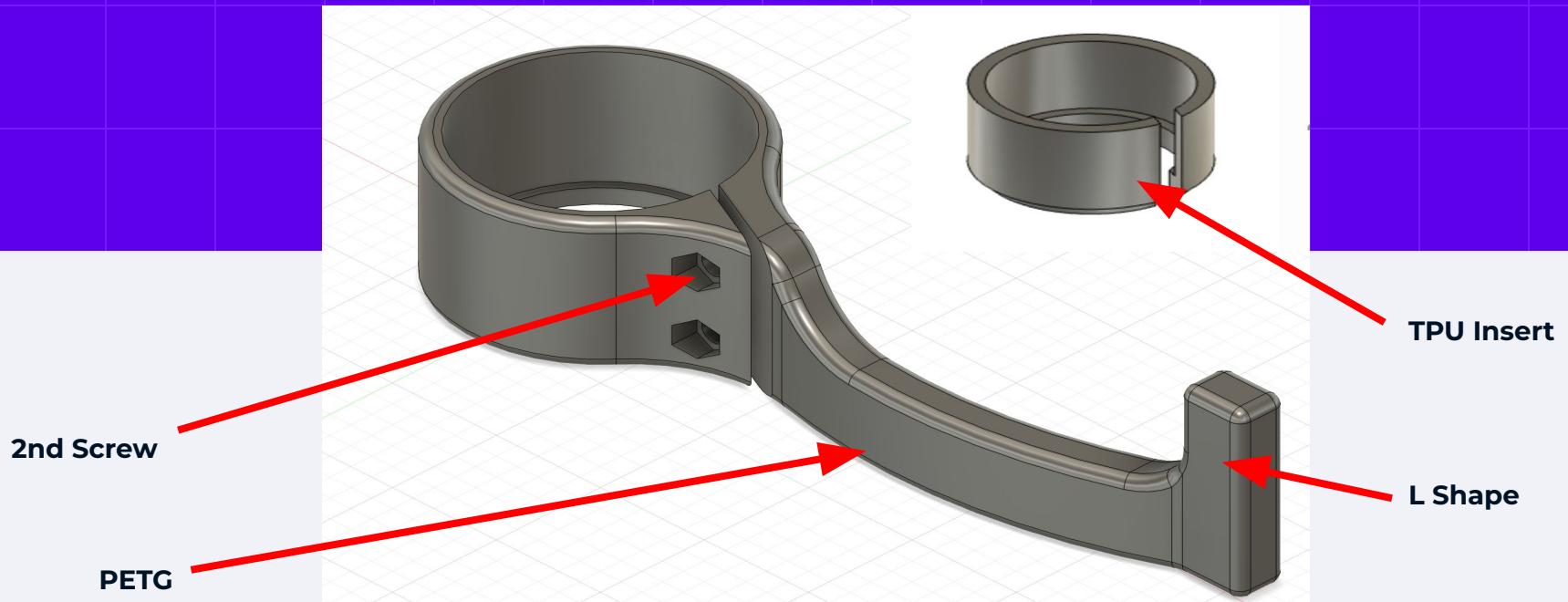
## Questions

- Any shape door knob?
- Install time?
- Screw accessibility?
- Emergency situations?
- Print settings?

## Ideas

- Insert
- L shaped end
- Portable option
- Add a second screw
- Foot operated option

# Feedback Integration



# Product Testing

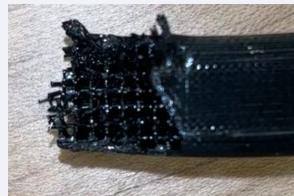
Printed each testing prototype at 25% infill

Used force gauge to measure how much force each could endure

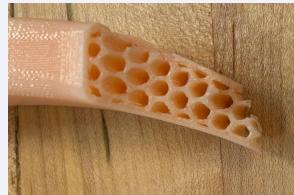
Gyroid



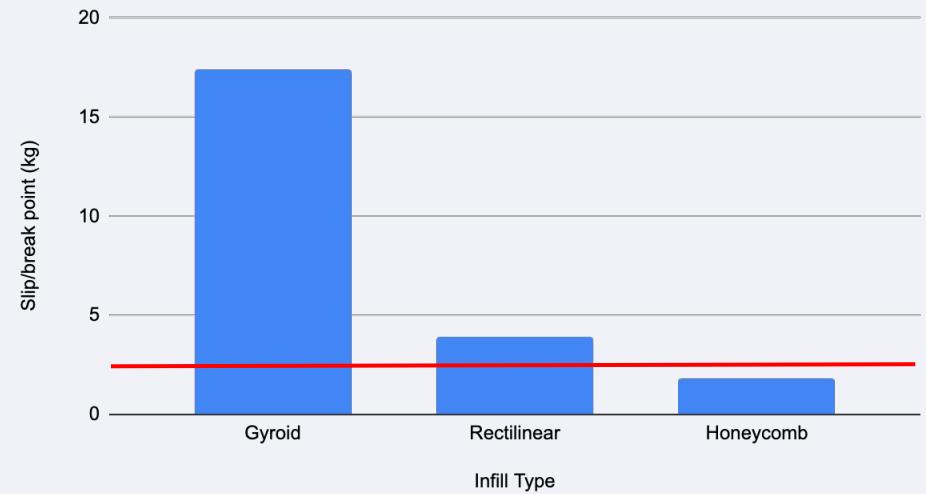
Rectilinear



Honeycomb



Breaking Point vs. Infill Type



# Final Design vs Others

10



Universal



Ergonomic Handle



L Shape



Adjustable



Sturdy



Thank  
Yew!



# Links



## Designs Used:

- <https://www.thingiverse.com/thing:1695541>
- <https://makerworld.com/en/models/828347-door-knob-to-handle-adapter>
- <https://www.myminifactory.com/object/3d-print-portable-assistive-door-handle-22582>

## Dozuki Guide

- <https://brandeismakerlab.dozuki.com/Guide/Accessible+Door+Knob+Adapter/127>