

PageWave: Page Flipper



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Problem Statement

For individuals with limited fine motor skills, turning the pages of a book can prove to be a difficult task.

Goal

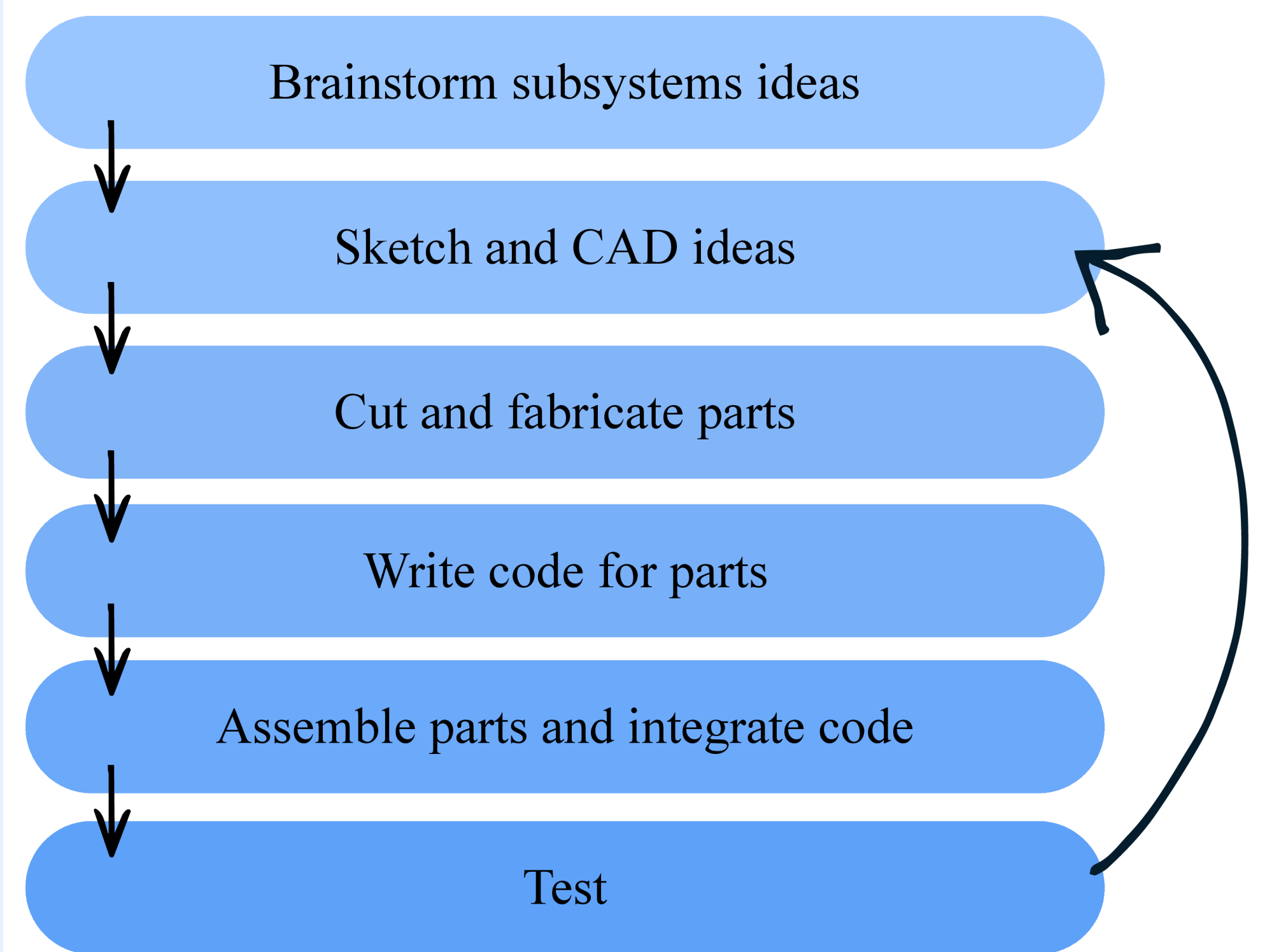
Our project aims to create a book stand that has a mechanism that can flip the pages of a book seamlessly without fine finger movement.

Requirements

Requirement Type	Requirement Statement	Level
Functional	Be able to flip a page forward	1
User	The device cannot physically harm the user in any way:	1
Functional	The device does not damage the book in any way	1
Functional	Book adaptability: be able to hold different types and sizes of books.	2
Functional	The device should be able to flip the page in less than 5 seconds	2
Functional	The device should only flip one page at a time	2
Cost	Cost under \$100	2
Physical	The device should not weigh more than 15 lbs	2
Functional	The different subsystems don't interfere with each other	2
Functional	Be able to flip the page backwards.	3
Functional	Takes less than two minutes to set up the device	3
Physical	The device cannot be wider than 24"	3
User	People with different types of disabilities can use it as created without adaption	3

Table 1: Requirements that the device should full fill sorted by level of importance with (1) being the most important and (3) being the least important

Methodology



Design I

Voice Activation



Pros

- Accessibility

Cons

- Error in large environments

Design II

Adjustable Dowel Page holders

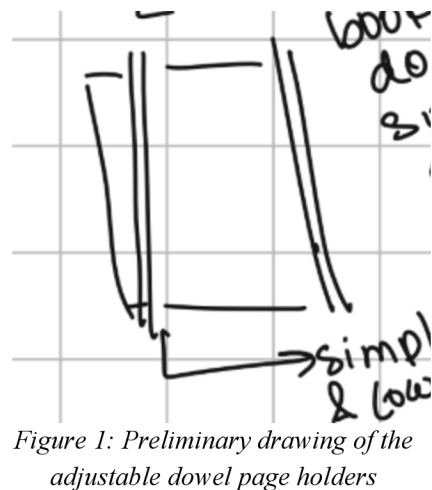


Figure 1: Preliminary drawing of the adjustable dowel page holders

Pros

- Simple
- Adjustable

Cons

- Could Cover Text
- Limits book adjustability

Design III



Figure 2: Image of the first version of the stand used for the page turner

Pros

- Flexible

Cons

- Very wide
- Hard to adjust

Current Design

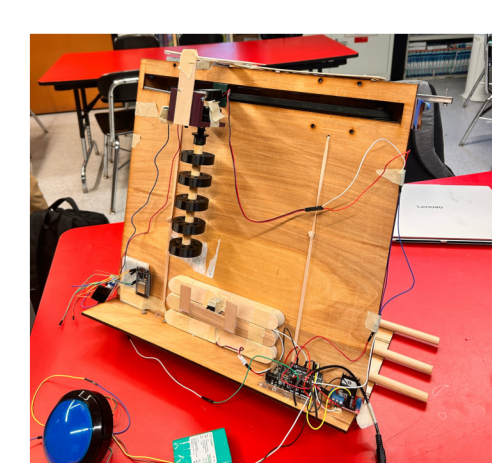


Figure 3: Image of the final version of the stand used for the page turner

Pros

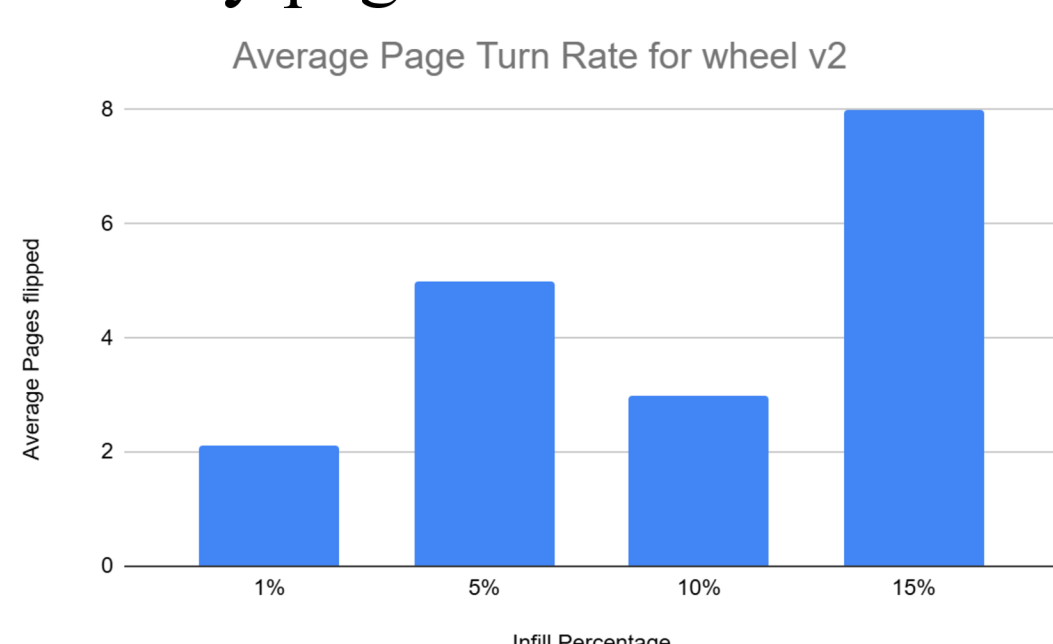
- Flexible
- Tall
- Light

Cons

- Not Compact
- Turns pages slowly

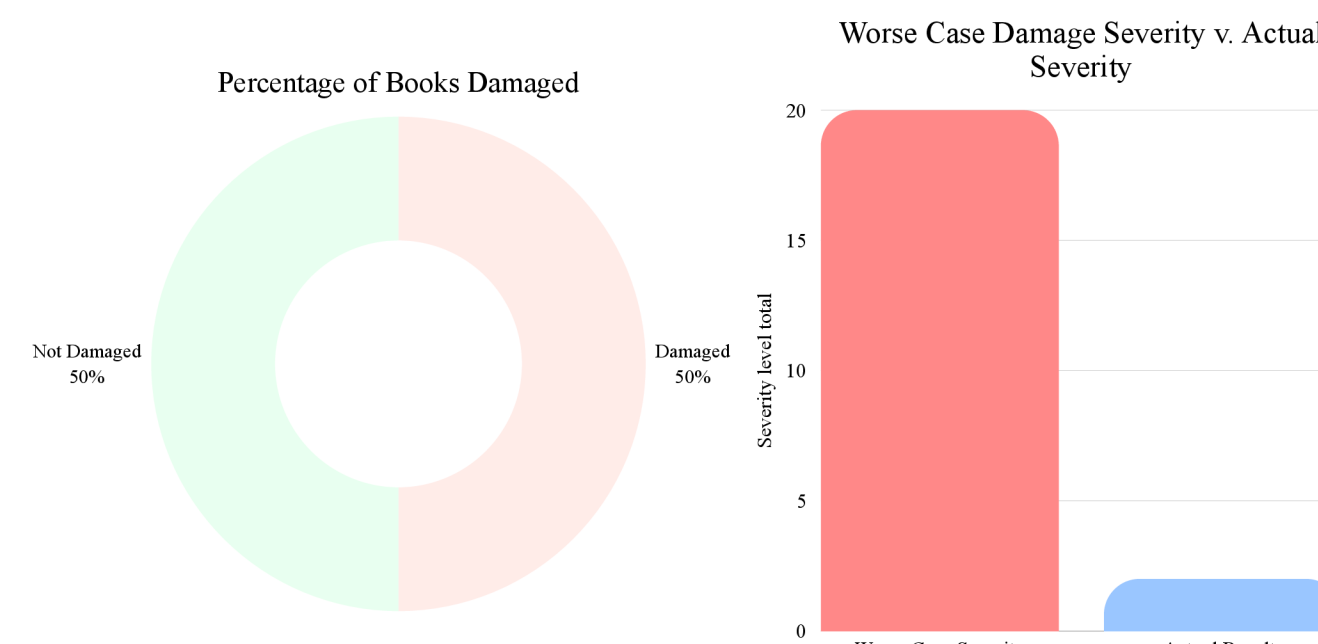
Design Study I

Determing TPU infill for wheels based on how many pages it would turn in one flip



Design Study II

Testing damage to book Results:



Design Study III

User compatibility for angle adjustment

Key Feedback:

Easy to adjust

Add handles to the sides

More inclination settings

Conclusion

The PageWave page flipper is a **novel** way for users with disabilities to **read** physical books **independently** without the strains of relying on fine motor skills or caretakers.

Future Work

- **Bluetooth** Button
- Longer rubber band for ligature hold
- Making the page turn quicker