

# FIDGET FUN

GROUP 13: MEEN 210-S05  
FALL '24 PROJECT

By Ryan Welty, McKenzie  
McCain, Ian Wilhite  
and Astrid Garcia



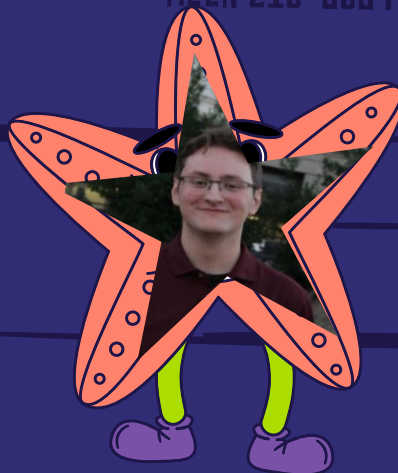
# THE TEAM



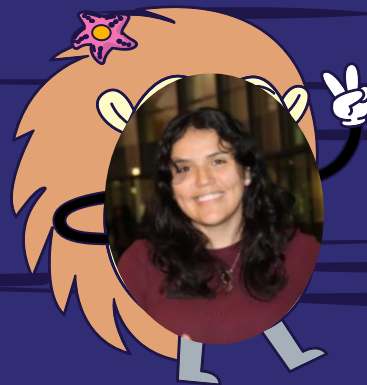
MEEN 210-505 FALL SEMESTER



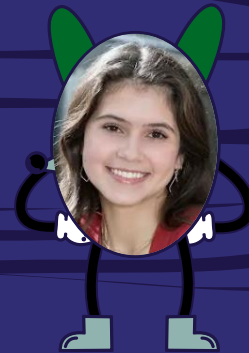
IAN WILHITE



RYAN WELTY



ASTRID GARCIA



MCKENZIE MCCAIN

# VIDEO ADVERTISEMENT





# WHAT IS FIDGET FUN

A customizable, modular fidget toy that transforms into endless puzzle track configurations! Simply snap the pieces together, and let the magic unfold as a smooth ball glides along the creative paths you design.



## Elderly Toy Concept Design

Tuesday, September 17, 2024 6:51 PM

Topics: Memory & Dexterity

2. marble game
2. dingo-related?
- 3 puzzle / puzzle box
4. magnet fishing
5. jigsaw
6. matching game
7. farming game

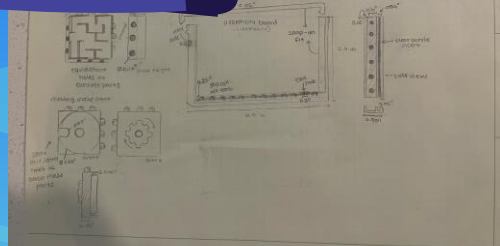
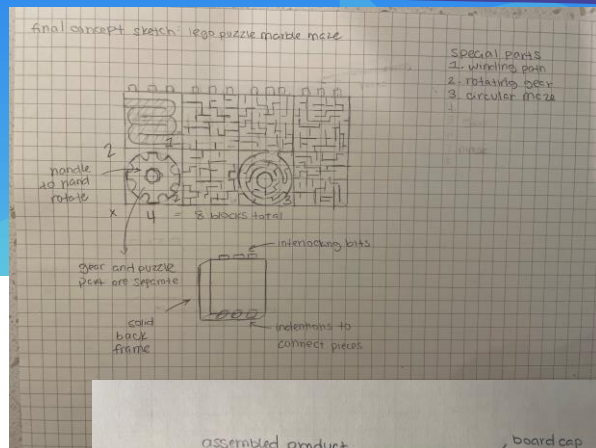
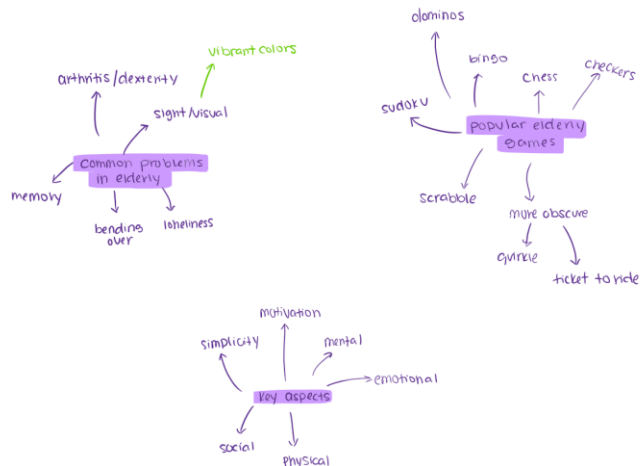
## Requirements

- $\geq 4$  non-trivial parts
- $\geq 1$  3d printed part
- $\geq 1$  moving parts

- \* can be powered by hand or motor

## Moving Part Ideas

- spring-loaded mechanism
- rotating dial



## Elderly Toy Concept Design

Tuesday, September 17, 2024 6:51 PM

Topics: Memory & Dexterity

1. marble game
2. bingo-related?
3. puzzle / puzzle box
4. magnet fishing
5. jigsaw
6. matching game
7. farming game

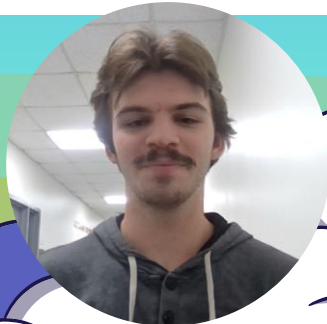
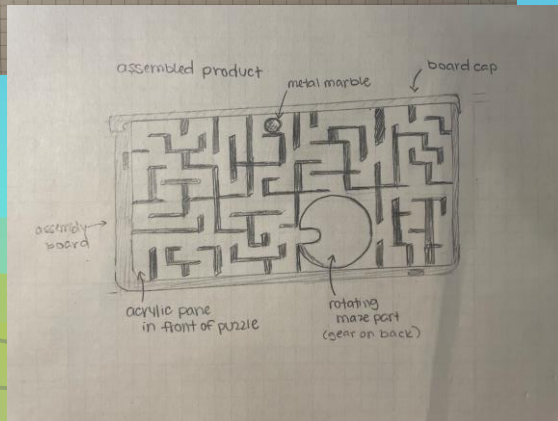
## Requirements

- $\geq 4$  non-trivial parts
- $\geq 1$  3d printed part
- $\geq 1$  moving parts

\* can be powered by hand or motor

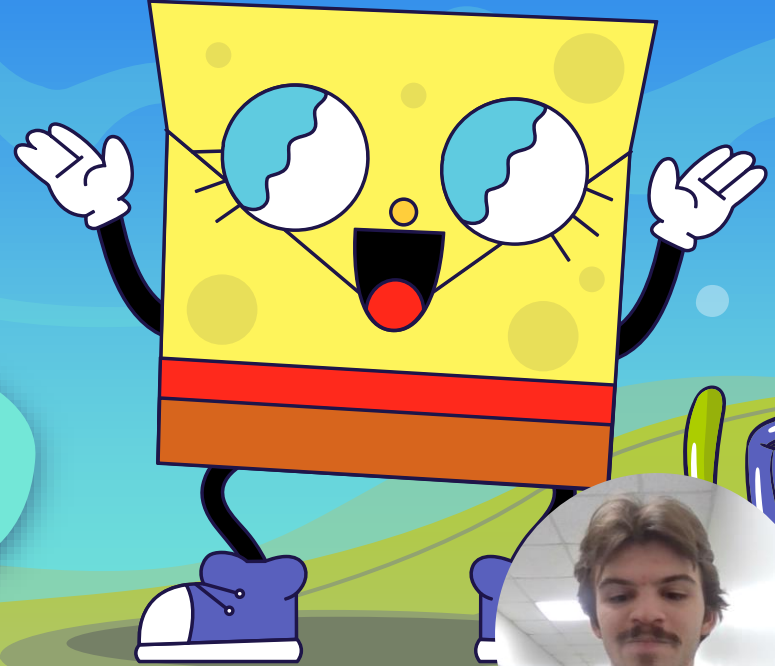
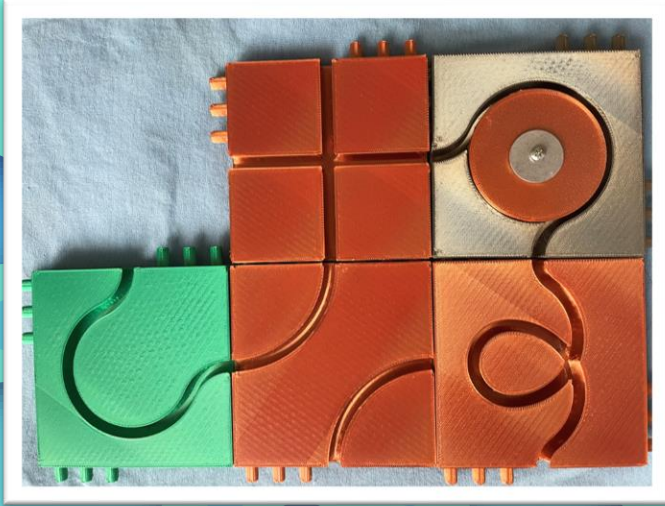
### Moving Part Ideas

- spring-loaded mechanism
- rotating dial





# THE PRODUCT



# PROBLEM & NEEDS

"My grandma loves gardening, reading, and solving puzzles. Recently, she has started noticing changes. Her hands feel stiff when she tries to grab plates from the cabinets or even when she goes to grab her favorite book. She has also noticed that she often forgets where she places her keys and has found it hard to concentrate for long periods of time. This has begun to make her sad and frustrated because her body doesn't work the way it used to. She needs something that will engage her mind and helps her feel calm and in control"



# PROBLEM & NEEDS

## Target Audience

- Intended for anyone in the elderly age range group, someone 65 years or older. Although it is not restricted to just this age group. This product is also intended for people suffering from medical conditions such as Alzheimer's or dexterity /mobility issues.

## Why & How would they use your product?

- Why: Fun, colorful, and easy to use!
- How: Just snap the pieces together and watch the ball glide through the path

## Needs Statement

- Engaging mental stimulation
  - Price-conscious
  - The key aspects should include topics: social, physical, mental, or emotional
  - Accommodating to elderly individuals
  - Intuitive gameplay mechanics
- Based off the project outlines from milestone 0, we were able to produce our needs statement





# ENGINEERING REQUIREMENTS

## Design Components:

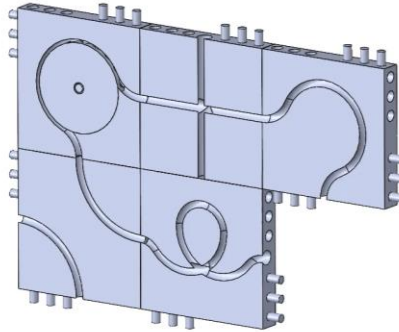
- Block Width
- Block Thickness
- Ball Diameter (from stock ball bearing)
- Tolerance around ball
- Length of pegs
- Depth of path



Name	Value / Equation
Global Variables	
"block_width"	= 100mm
"block_thickness"	= 15mm
"ball_dia"	= 0.25in
"ball_tol"	= 2mm
"peg_dia"	= 6mm
"peg_tol"	= 1mm
"patt_offset"	= 3mm
"peg_len"	= 10mm

# MODELING

Animated Exploded View of Fidget Fun Assembly



# FABRICATION PROCESS

MACHINE USED: Creality K1 3D printer

MATERIAL: Smooth PLA

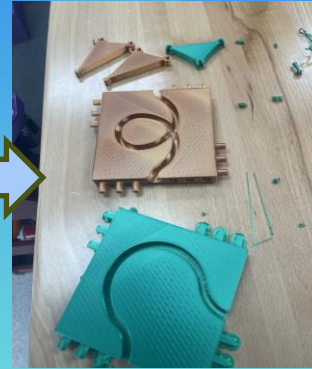
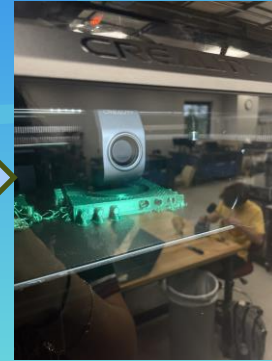
Washer & Screw

23 hr print time, 310.96 grams

Same scale print

Conformity :

- The washer and screw
- The tolerance
- Size of ball bearing
- Scratched board design
- Orientation of the plates



# THANKS AND GIG-EM'

