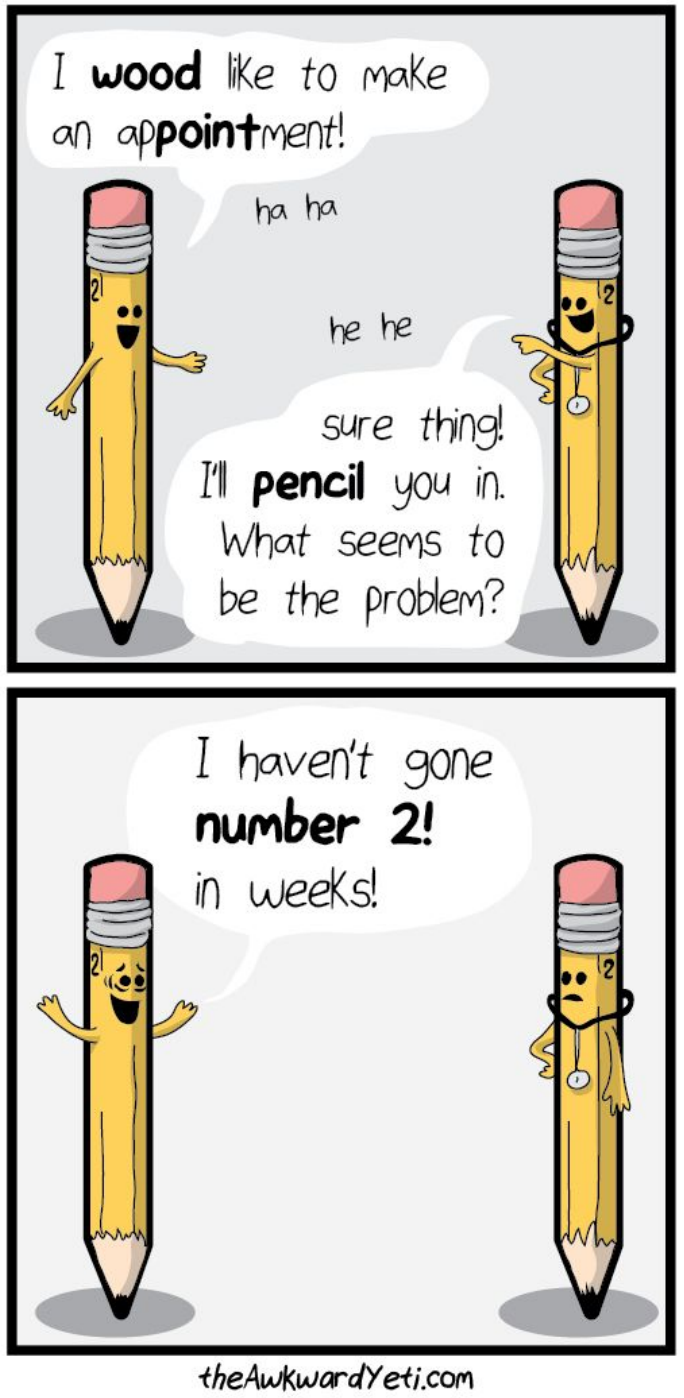
AT&T Software Symposium 2021

CONNECTIONS Reimagined

Pencil It In

Design Thinking

- Paul Ireifej pi733j
- Thomas Kenny tk694h



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Design Thinking / Self Sharpening Pencil

Pencil with standard thickness lead, self revolving gear to sharpen while using. Even distribution across tip. Family friendly, child safe and features to help parents such as a built-in timer to help parents manage kids' activities.

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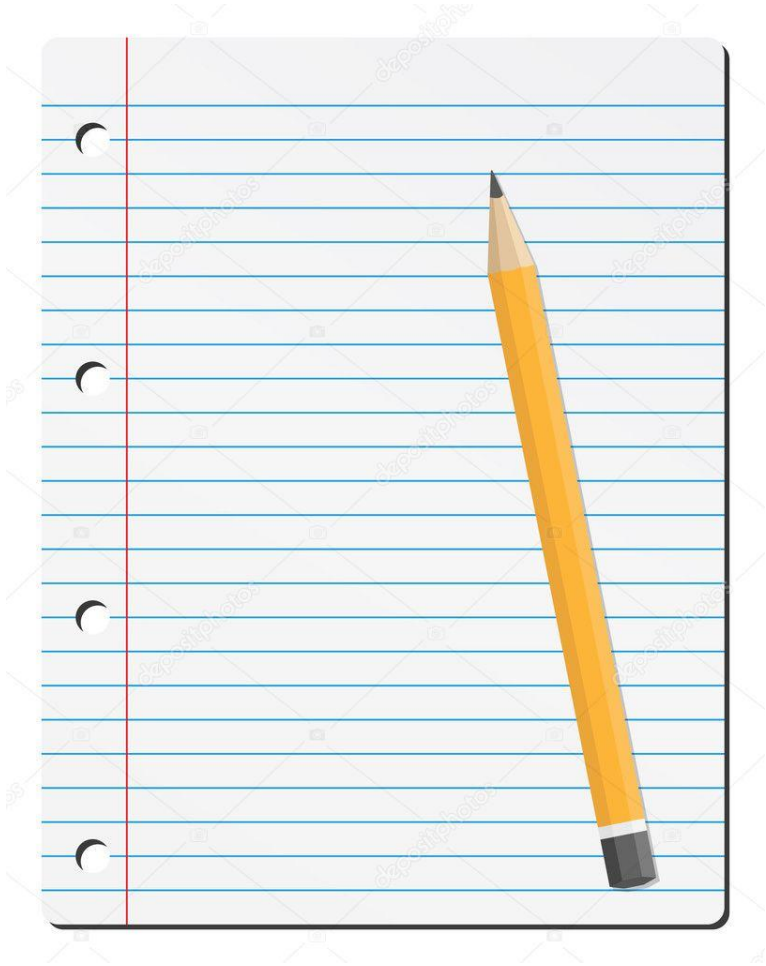
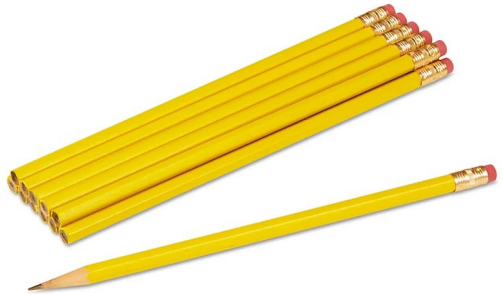
Technologies

- lucid.app, paper & pencils



Product Breakdown Chart



Characteristics	Standard Pencil	Mechanical Pencil
Relative Advantage	3	8
Complexity	8	6
Compatibility	7	7
Trialability	9	7
Social Observability	5	8
Customizability	2	8
Total	**34**	**44**

Personas (kids)

Gabriel Ireifej (age 7)

Attributes
- funny
- smart
- playful
- hard working

Goals
- complete homework
- draw comics

Concerns
- getting a sharp pencil
- keeping pencil sharp
- don't like to stop activity until complete
- pencil getting too short

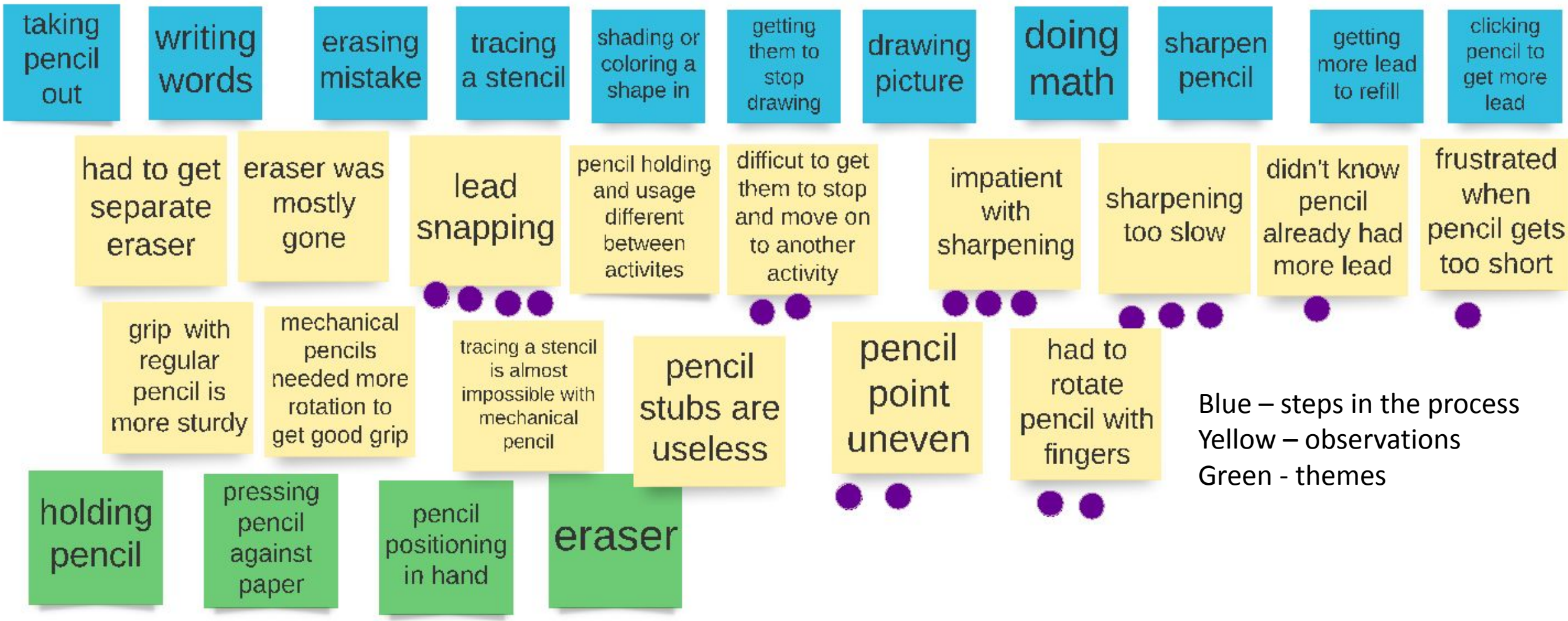
Raphael Ireifej (age 6)

Attributes
- funny
- smart
- playful
- likes to draw

Goals
- have fun
- draw Pokemon
- color within the lines

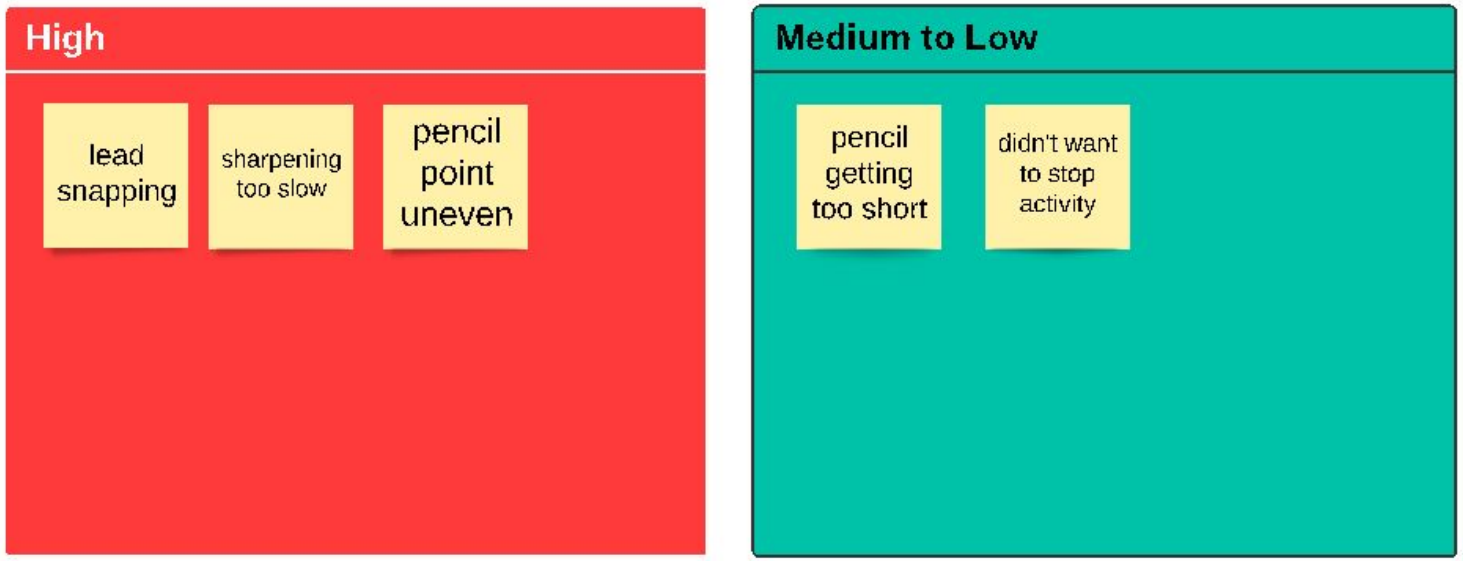
Concerns
- snapping lead
- snapping pencil

Experience Map



Blue – steps in the process
Yellow – observations
Green - themes

Pain Points



Goals

- self sharpening
- evenly distributed sharpening
- built-in timer
- maintain consistent pencil length during activity
- more durable / less breakage

Type something

Storyboarding - self sharpening

Persona: Gabriel Ireifej

Scenario: Sharpen pencil

Gabriel is drawing a picture. The tip of the pencil gets flat. He interacts with the pencil itself directly in some way to sharpen it.

#1 - pencil gets flat

After invocation (maybe via button press or automatically every time the pencil is put to paper), a gear inside will rotate the pencil lead every time, continually keeping a sharp, centered point on it.

#2 - trigger gear rotation

The rotation and sharpending will ensure that th epiece of lead will remain at a point givint the same precise pencilmarks you would get from a newly sharpened pencil.

#3 - pencil is sharpened

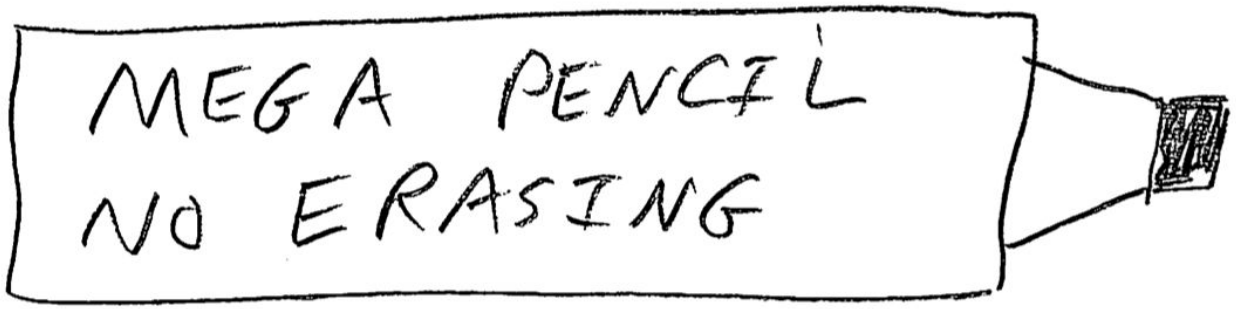
Storyboarding – timer

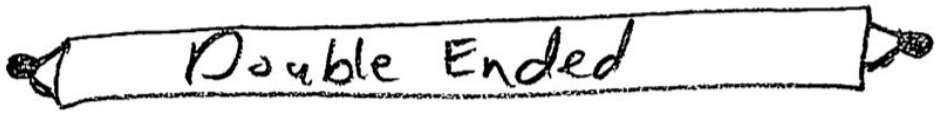
Persona: Gabriel Ireifej

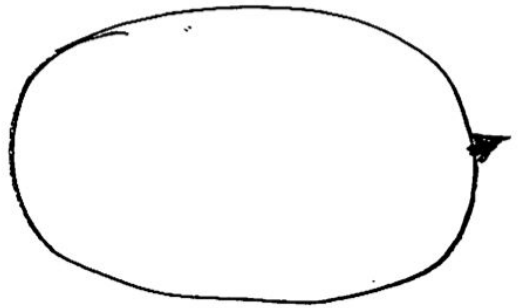
Scenario: Move to new activity

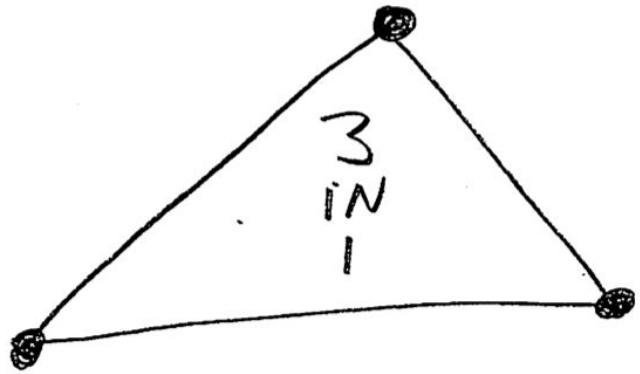
Gabtriel is working on a comic book but only has limited 20 minutes before bed time. He interacts with the pencil directly in some way to trigger a timer.	The timer is set to alarm after a given duration (either default or somehow customizable). After the duration, the pencil will either play a musical tone or vibrate.The piece of lead could even retract automatically once the timer is up.	This will indicate to Gabriel that the time is up and he needs to stop.
#1 - timer is set	#2 - pencil indicates timer ends	#3- reinforced trigger to move on

Ideation #1

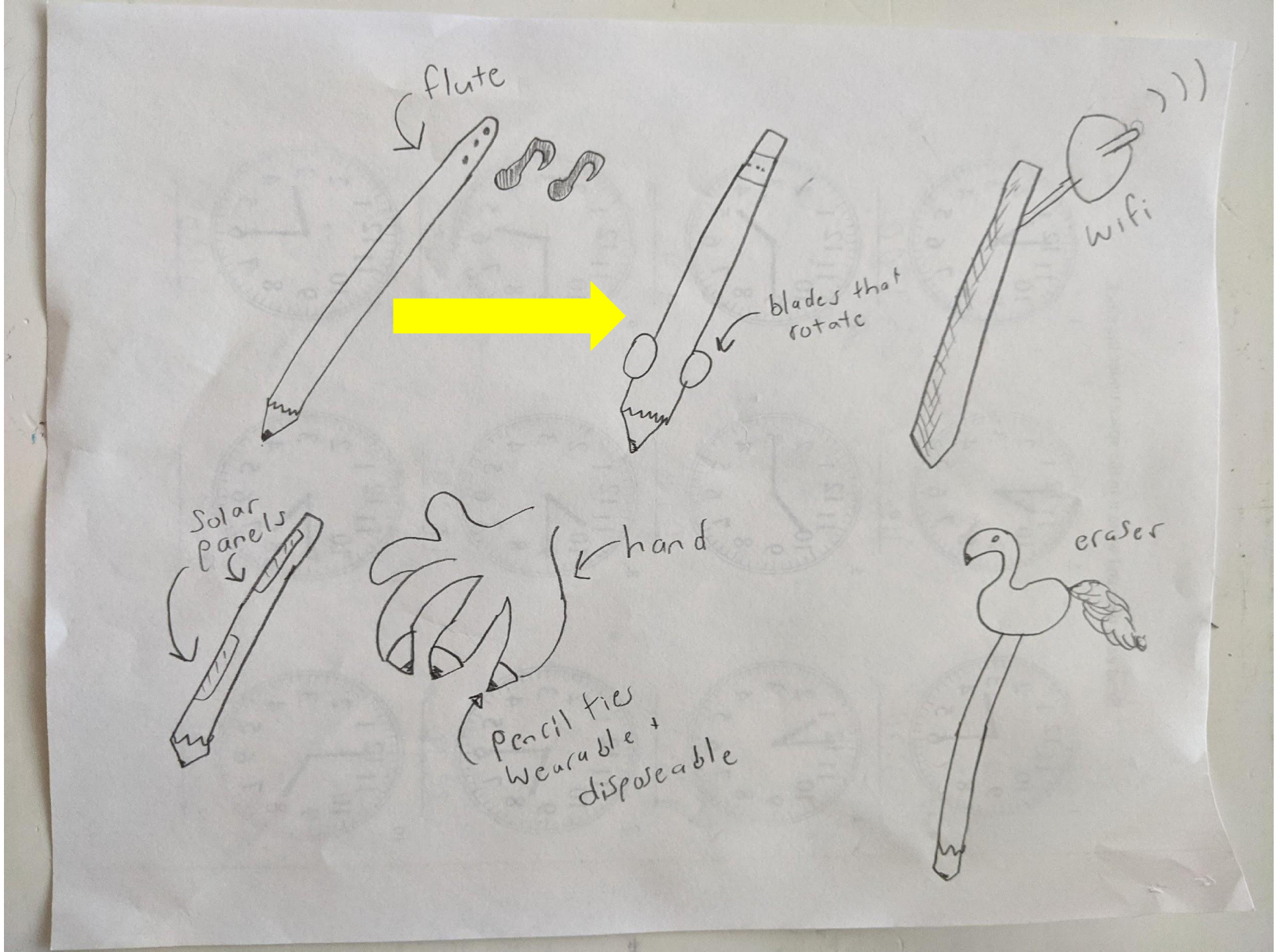






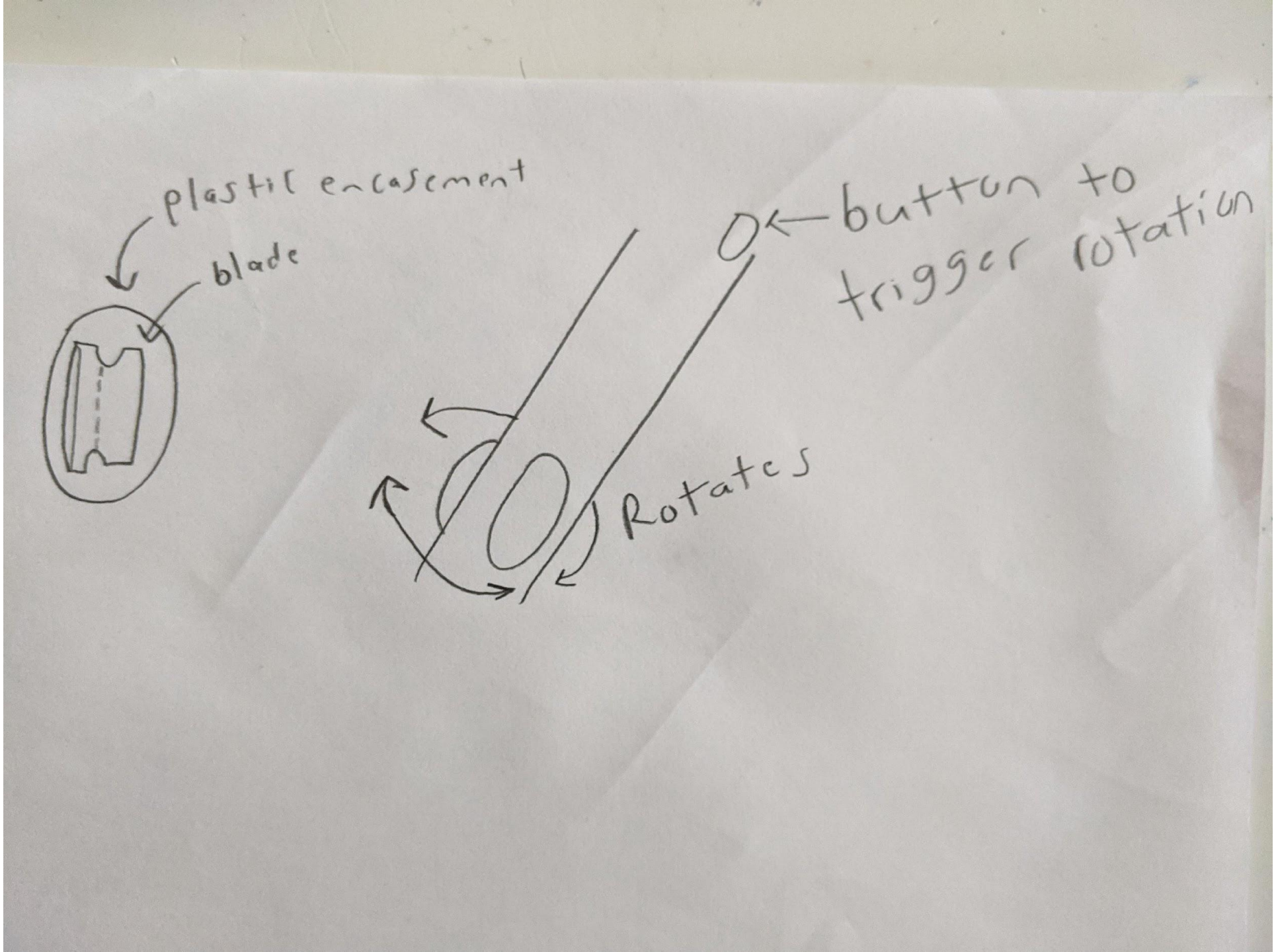


Ideation #2


flute
blades that rotate
wifi
Solar panels
hand
eraser
pencil ties
wearable +
disposeable

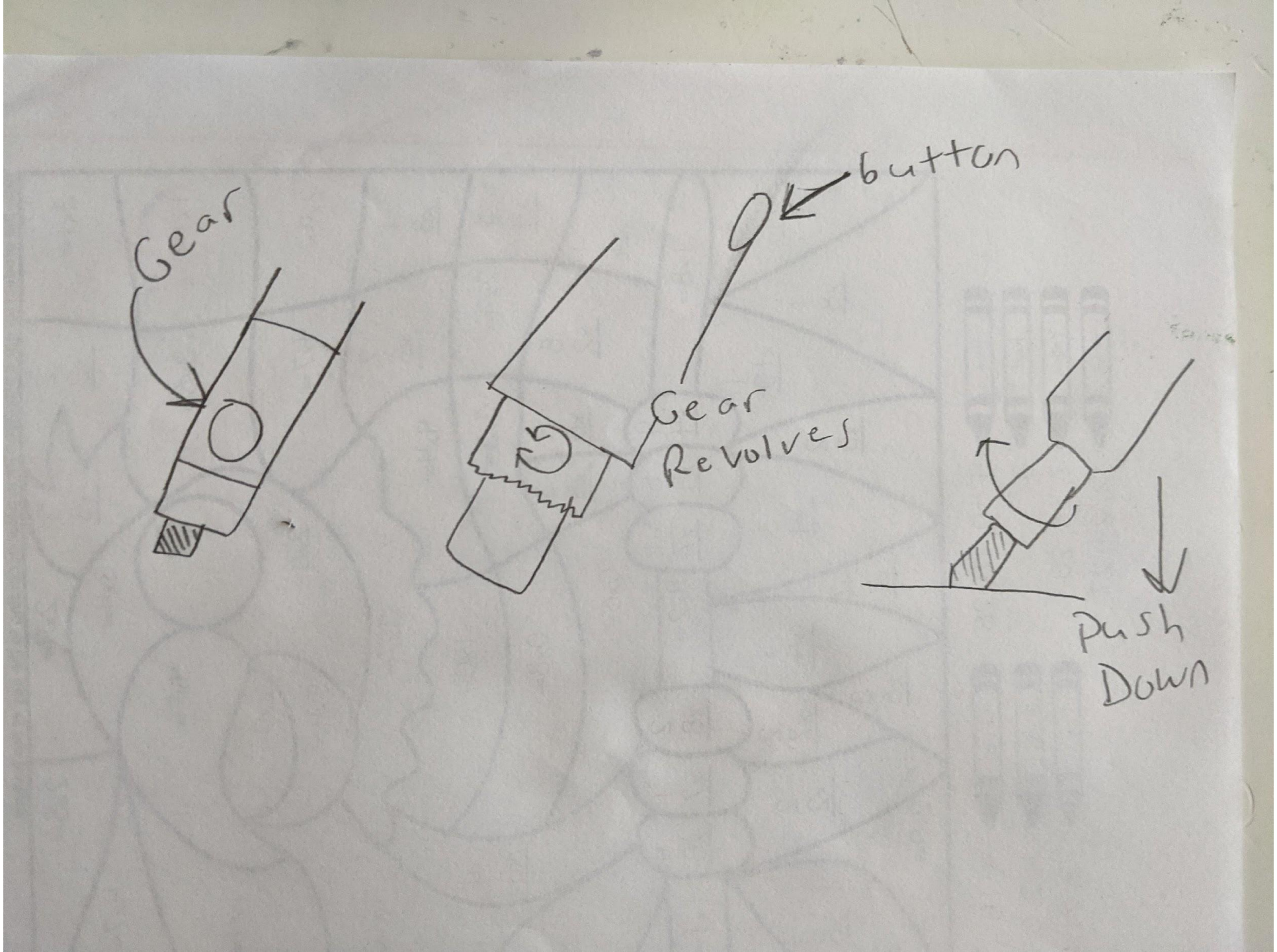
Prototype #1

- External rotating blades with encasement
- Button to trigger sharpening



Prototype #2

- Internal rotating blades with revolving gear
- Pushing pencil down on paper will trigger sharpening
- Pressure sensor or proximity sensor



In Summation

We Did
- Completed 3 Design Thinking PLE courses
- Empathize, Define, Ideate, Prototype, Test

Because
- Improve the standard pencil to be above & beyond the mechanical pencil
- Exercise the Design Thinking process

We Learned
- The Design Thinking process in action yields tangible results
- Although not ideal, remote collaboration is possible with online tools

More Time
- Consider connecting the pencil to wifi, record movements and generate digital image
- Interview more people, build a working prototype

Fun Facts
- After working on this for too long, I wandered into a Walgreens and found myself staring at their pencil collection
- My kids are actually fun to be with

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Metrics

- Times stopping activity to sharpen pencil
- Time it takes to sharpen the pencil
- Time it takes to transition to a different activity
- Number of verbal complaints
- Number of times rotating pencil to get a good angle