

Clear Skateboard

Engineering R&D S21

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Define and Explore

The background features a series of overlapping, wavy horizontal bands. The top band is a deep red, which transitions into a purple band, and finally into a white band at the bottom. The waves are soft and fluid, creating a sense of movement and depth.

Problem Definition: Clear Skateboard

Goal: Build a skateboard that I can use

Primary Functionality:

- Holds four wheels
- The trucks hold to the skateboard
- A strong deck

Secondary Functionality:

- Easy to carry around
- Easy to cruise around
- Anyone can ride it

Constraints:

- Must fit on a rack
- Needs to support human weight
- I only needs to be able to hold a person
- Used trucks, used wheels

Research on Clear Skateboards

The background of the image features a soft, wavy gradient of colors. It starts with a deep purple at the top, which gradually transitions into a lighter lavender and then a pale pink towards the bottom. The waves are smooth and flowing, creating a dreamy, ethereal atmosphere.

Ghost Longboard

Functionality: To be able to get around places rather than foot

Pros:

- You can make it look any way you want
- It's different from regular skateboards
- The board is easy to ride

Takeaway:

- The designs are very creative and visible
- You have lots of design options
- Make it more sturdy to stand on

Cons:

- They bend a lot
- Scratches during manufacturing
- Not for little kids



Clear Plastic Longboard

Functionality: To be able to get around places rather than foot

Pros:

- They have lights in the middle
- It rides smooth and goes over bumps easy
- They are plastic and more flexible

Takeaway:

- The design looks stable
- You could be riding with cool lights
- I don't want the lines on the board

Cons:

- Unstable at higher speeds
- Less area for your feet



Longboard

Functionality: To be able to get around places rather than foot

Pros:

- Sturdy deck and hold a lot of weight
- Grip tape helps to stay on the board
- It's very smooth when riding

Takeaway:

- Not clear like I wanted
- Way more sturdy and strong
- Make turns easily

Cons:

- Flimsy in the middle
- Grip tape can scrape you up



Takeaway Summary/ Thoughts

- *There is a lot of options I can take*
- *I need to plan out how much money I want to spend*
- *There is a lot of materials I can use at home*
- *I think I will use the structure of the ghost skateboard*
- *There are a lot of resources to make a clear skateboard*

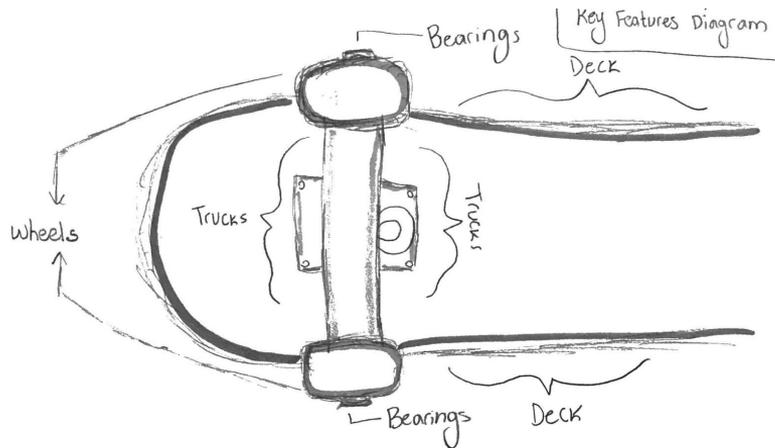


Ideate & Design

Key Features

Primary Functionality:

1. Holds four wheels
2. The trucks hold to the skateboard
3. A strong deck



Key Features:

1. **Name:** Wheels
Knows: Attached to trucks, they roll with the movement of the board
Unknowns: The type of wheels, Special tool to put them on?
2. **Name:** Trucks & Bearings
Knows: They attach together, they hold the skateboard together
Unknowns: How will I install them, do the holes need to be a certain size to put the trucks at
3. **Name:** Deck
Knows: Strong, Grip Tape, Made out of wood
Unknowns: What to use to shape the skateboard, how big should I make my skateboard

Prototype Design

Prototype Goal:

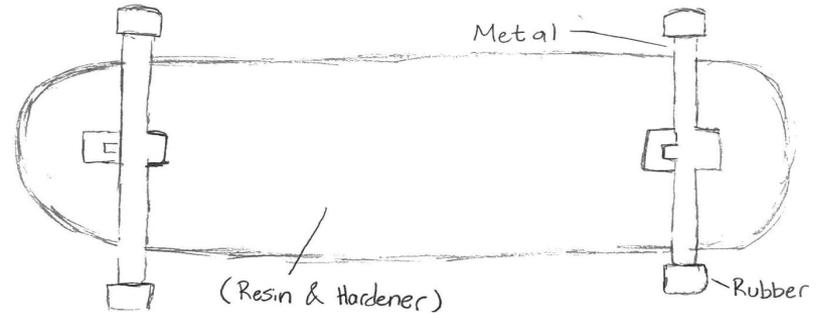
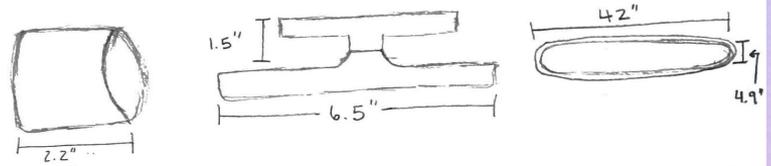
- Figure out the size of the skateboard
- Test out of the board can hold enough weight

Approach:

- Make a mold with the styrofoam
- Put the resin and hardener to create the board

Materials:

- Cardboard
- Resin
- Hardener

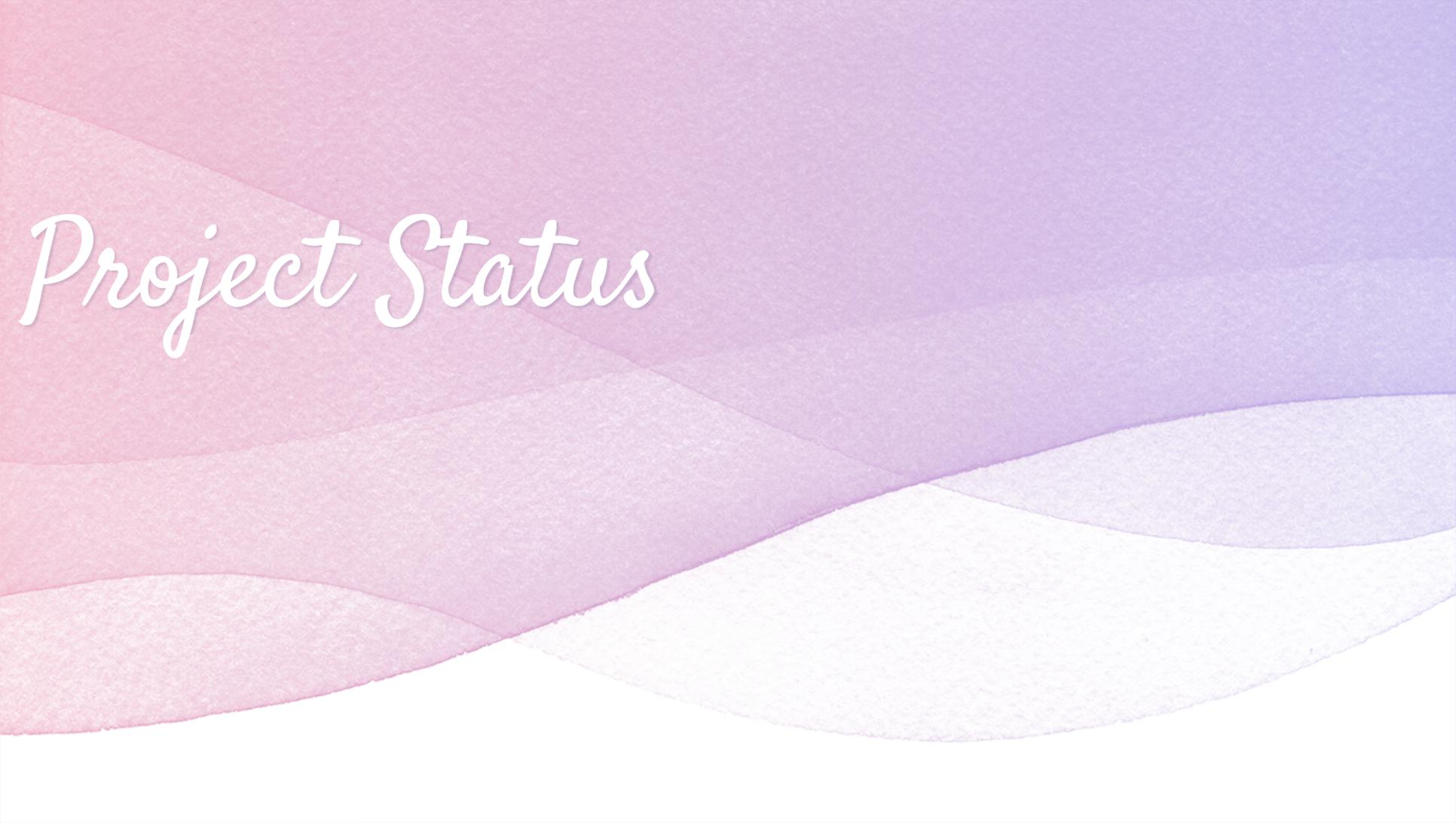


Notes
- Mini version for Prototype
- Full size for final

There will be a design in the middle

4 holes to hold trucks in place

Project Status

The background of the slide features a soft, wavy gradient. It transitions from a light pink on the left side to a light purple on the right side. The bottom of the slide is a solid, very light pink color. The overall aesthetic is clean and modern.

Project Status

Status:

- *In my project I am ready for the rough draft but I unfortunately have to wait to do the prototype until I do my rough draft. When I went to do my prototype the resin was already hardened in the container so I couldn't do my prototype. It was disappointing not being able to do it but I will be able to test all of the parts when I do the rough draft. My slides are coming really well and I am ahead of that aspect.*

Next Step:

- *My next steps are to make a rough draft but I will have it in different molds. I will have to mini molds and one mold that is the actual size of a skateboard. I will be able to test my rough draft and prototype together with using all the different molds.*

Potential Barrier or difficulties:

- *Not having enough materials (resin)*
- *Not being stable enough*



Rough Draft

The background features a soft, wavy gradient of colors. It starts with a light pinkish-purple at the top, transitions through various shades of purple and lavender, and ends in a pale, almost white lavender at the bottom. The waves are gentle and flow from left to right, creating a sense of movement and depth.

Rough Draft Design

Rough Draft + Design

Goals: Holds four wheels, the trucks hold the skateboard,
A strong deck

Changes:

- Size (normal size skateboard)
- Stronger mold for skateboard

Keeping the Same:

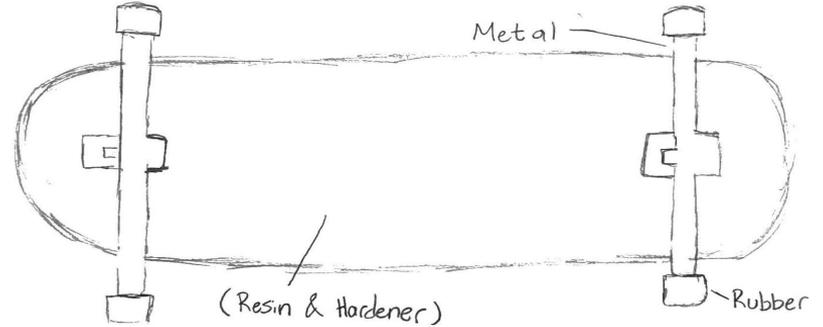
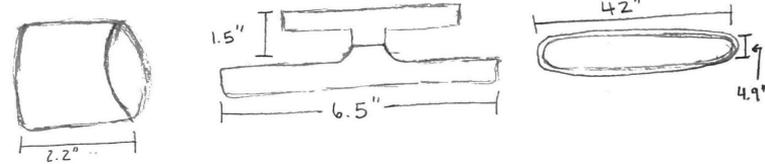
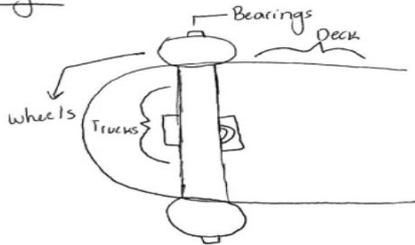
- Materials
- Tools

Unknowns:

- The placement of holes to attach the screws & trucks
- The type of wheels to use on the skateboard

Notes: I really like the materials I'm using especially the resin & hardener.

Design:



Rough Draft Build

Approach:

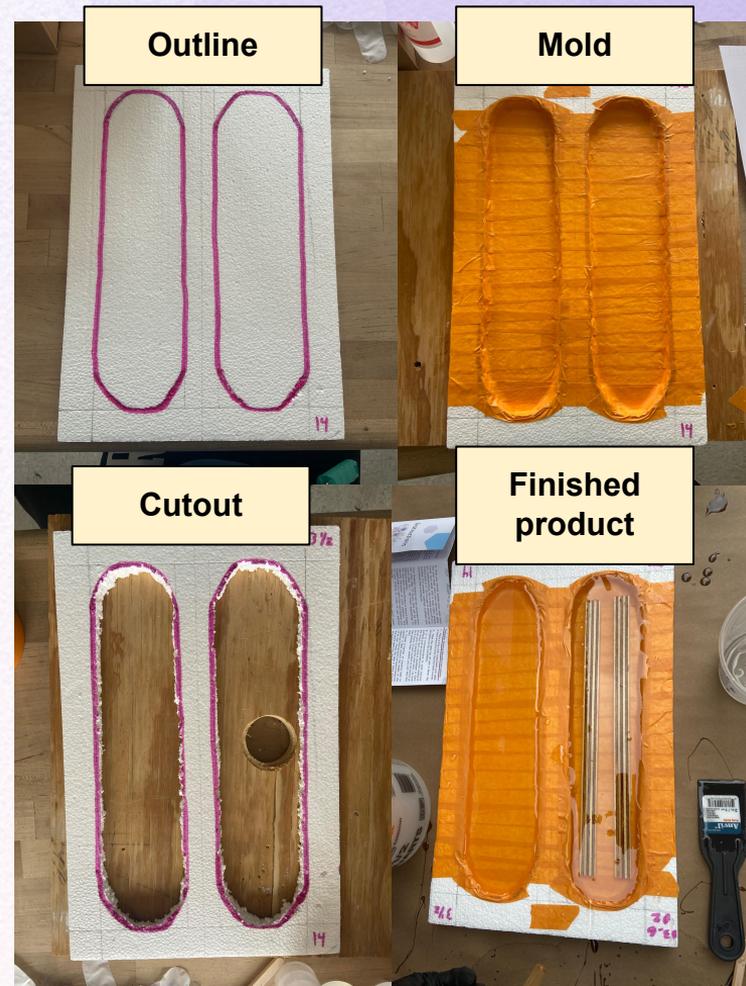
- Measured the outline of the skateboard
- Cut the styrofoam in the shape of a skateboard
- Used tape as the base so the resin stays inside the mold
- Did a mini size to get an idea of how the resin will look for the deck of the skateboard

Something I liked:

- I liked the building process
- The end product was very fulfilling
- Being able to use resin was very cool
- I was able to cut wood using a cool machine in Chase's classroom

Something I will not do again:

- I will not put wood because it floated to the top of the resin and made everything more difficult



Rough Draft Test

Test objective:

- A strong deck

Test method:

- User Testing
 - Put books on skateboard
 - Stood on the skateboard
 - Drilled holes through skateboard

Test criteria for success:

- Weight was held well
- No cracks when drilling the holes

Evidence:

- The skateboard was kind of a success but all of the styrofoam didn't come off and the tape but the rest of the tests were a success.



Rough Draft Evaluation

Aspects of my prototype that I like:

- The resin hardened really well and was a strong deck
- The wood planks worked really well to keep the board straight

Aspects of my prototype that I did not like:

- I didn't like the wood that stuck to the outside of the board
- I didn't like how hard it was to take the styrofoam off

Improvements for the next iteration

- Use clear tape
- Make the skateboard bigger
- Use a bigger styrofoam board



Final Draft Documentation

Final Build



What did you build:

- I built a skateboard
- It was made out of resin and hardener

What steps did you take:

- I started by making the mold mixed resin and hardener
- I had it sit overnight and the skateboard was finished

What went well:

- The top of the skateboard turned out really smooth
- The mold came off super easy this time

What went bad:

- The mold was leaking resin and hardener
- The skateboard was a little sharp on the edges

What surprised you:

- How good my skateboard looked coming out of the mold
- How much resin and hardener I would need

Final Design

What was your final design:

- My final design was a resin penny board
- It was clear and you were able to see the trucks through it

What influenced your design:

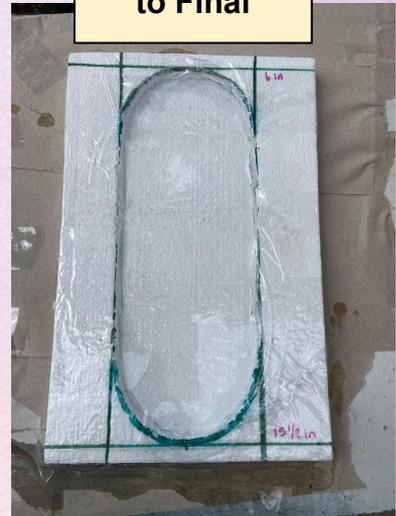
- The influence was my sister that rides skateboards
- The other influence was to be able to get places faster than walking

Has the design changed throughout the class:

- My design changed from two like board to one big board
- My design also changed it's materials so the mold would be easier to take out
- What are the key features of your design:
- Deck and wheels
- Trucks and bearings



Rough Draft
to Final



Final Testing

What are you testing:

- *I am testing how my skateboard rides*
- *I am also testing the strength of the board*

What type of testing did you employ?

- *I used user testing*
- *The other one I used was simulated testing*

What is your criteria for success:

- *To have it hold enough weight for one person*
- *To be able to be ridden a certain distance*

What evidence do you have?

- *The pictures of the board with the trucks*
- *Pictures of different angles to show how sturdy it is*



Final Evaluation

Summarize your project

- My project is a resin skateboard that is clear throughout the whole deck
- It looks like a penny board and it has trucks and wheels like a normal skateboard

What do you like about your final:

- I like how cute and small the skateboard turned out
- I also like how I was able to ride my skateboard really far for being so tiny

If you could do this project again, what would you change:

- I would change the skateboard size to be a normal sized skateboard
- I would also change the wheels I used to smaller ones to be able to do tricks on

Does the final accomplish all of your Primary Functionalities

- Yes this accomplished all of the primary functionalities

Does the final accomplish any of your Secondary Functionalities

- Yes this accomplished all of the secondary functionalities

