

A photograph of a person lying in a hospital bed, covered with a blue and white striped blanket. A pair of black-rimmed glasses is resting on the white bedsheet to the left of the person's head. The scene is dimly lit, suggesting a hospital room at night or in low light.

DSID 128 Processbook

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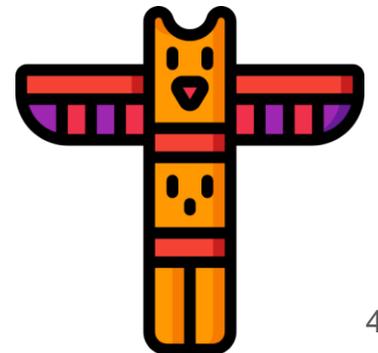
Final Design

- Final render
- In Context
- How to use
- How it works
- Build BOM
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What is a ritual?

The established form for a ceremony of any sort, religious, daily life, or doing daily tasks.

How can we improve an **existing ritual**?



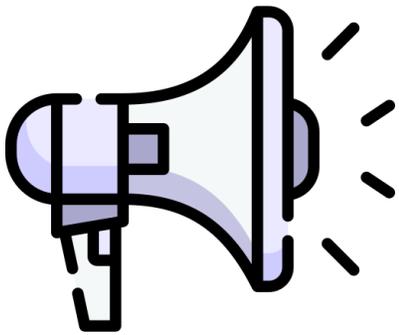
Exploration

In this phase we are researching for different rituals, pain points, use cases, and demographics to focus on.



Self Assessment

Once we picked our topic we did interviewed each other to find possible pain points to research.



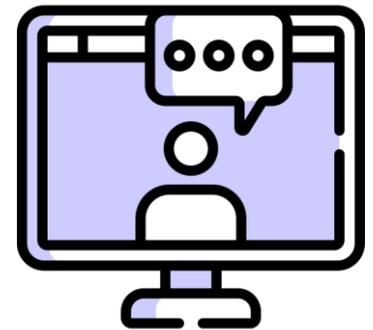
Loud Noises



Excessive Lights



Late night Texts



Web Surfing

Use Cases & Demographics

After several brainstormers we choose to look into **First time Parents** and **Teens** and focus on sleep in their own **home** since most people are home now during COVID times.

Found Pain Points (Parents)

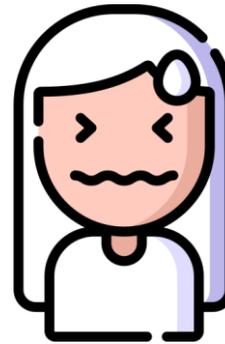
On Average, first time parents get about 4.5 hours a night for the first 12 months of their baby being born. These are the most notable pain points we found that is keeping them from going to sleep.



Getting baby to Sleep



Modern Distractions



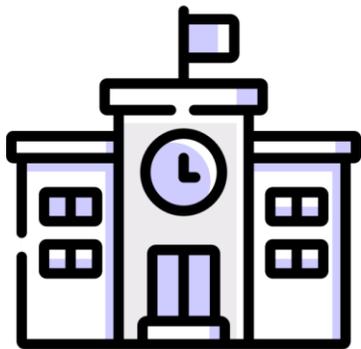
Anxiety and Exhaustion



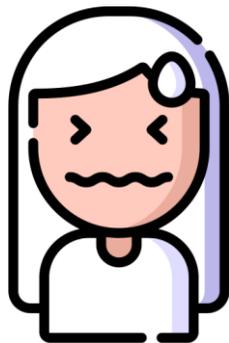
Being Away

Found Pain Points (Teens)

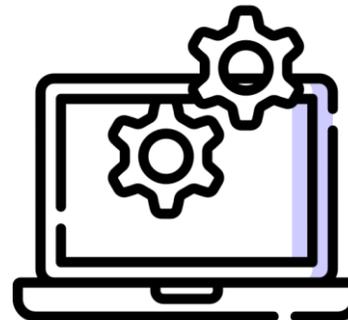
69% of HS Students sleep under 7 hours a day. This can be detrimental for their health long term. These are the most notable pain points we found that is keeping them from going to sleep.



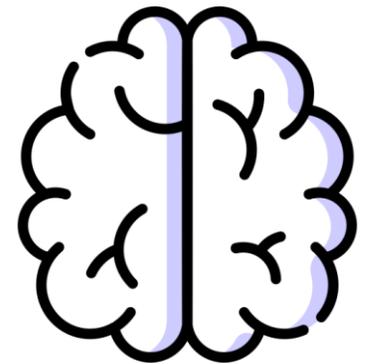
School



Anxiety and
Exhaustion



Technology



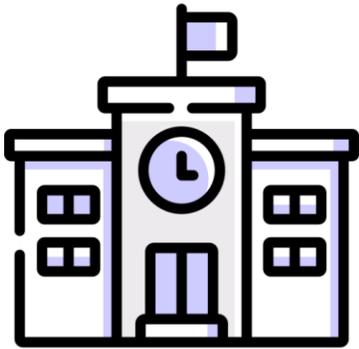
Active Mind

Reassessment

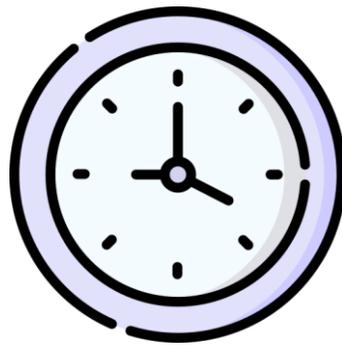
After looking into parents and teens we decided to go a design for all route, primarily focused on teens. Similar pain points can be found within the millennial generation and younger. As time goes on, more people would be undergoing similar pain points in their sleep.

Interviews Analysis & Pain Points

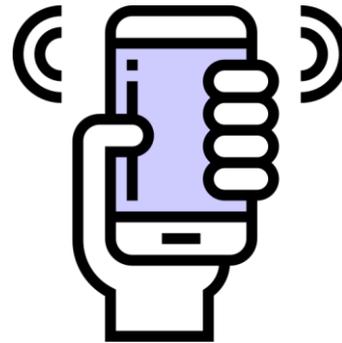
After interviewing several people via Zoom, a college graduate, college senior, three college juniors, and a pharmacist, we found several common pain points between them and similar to ones we found previously.



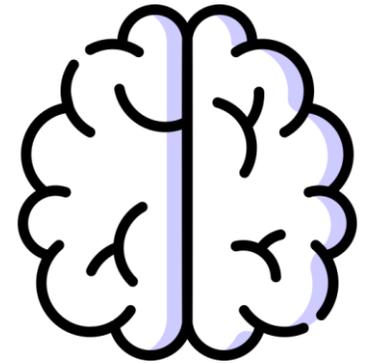
School



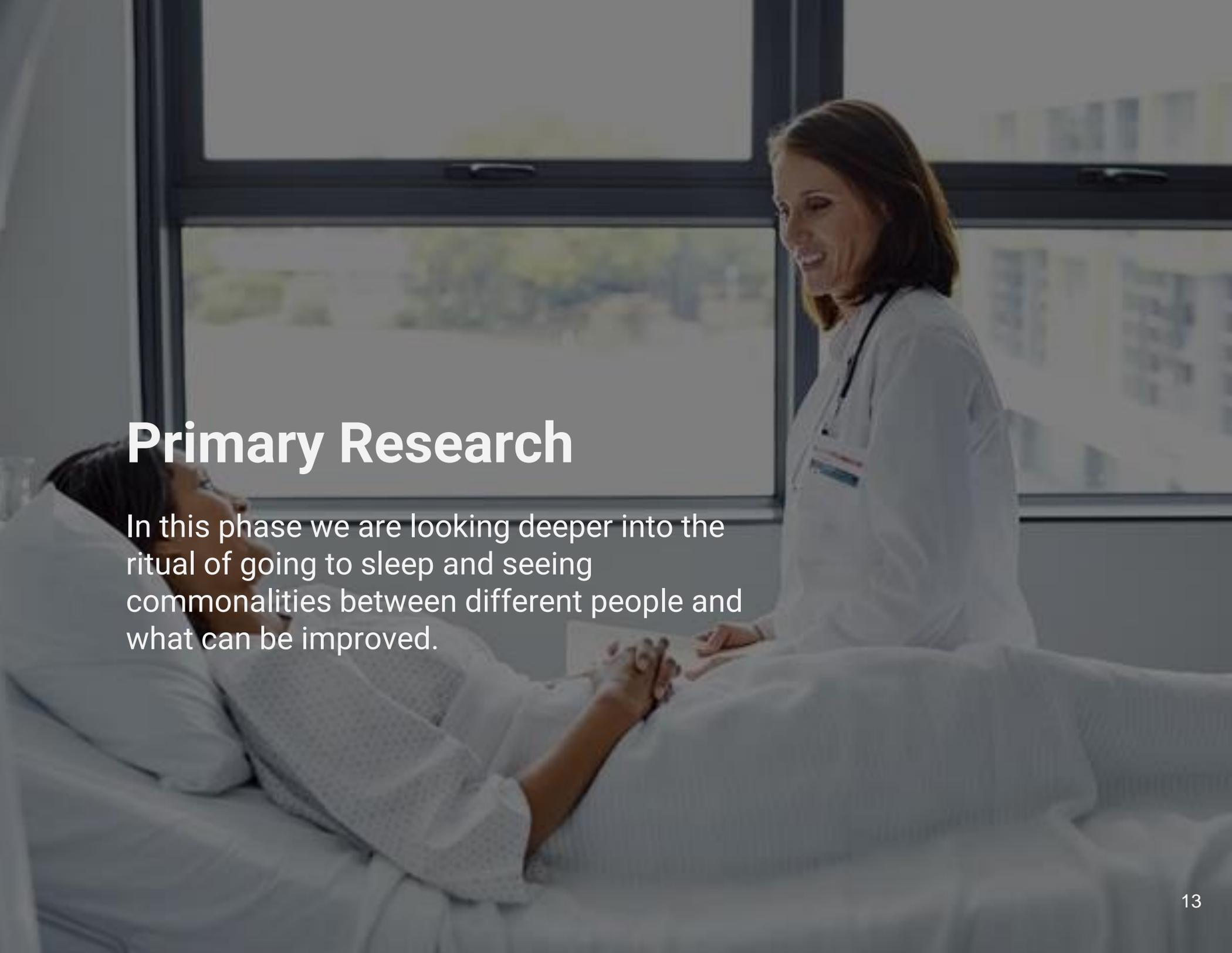
Bad Sleep
Schedule and
Habits



Screens &
Technology



Active Mind



Primary Research

In this phase we are looking deeper into the ritual of going to sleep and seeing commonalities between different people and what can be improved.

Persona

Name: Mariah

Age: 26

School Level: Graduate

About her: Mariah is trying get her Phd in Environmental Science at her state school. She is very efficient with her time but sees that her workload will always catch with her leading to more stress. She also TAs for a class which adds to her load.



Persona Routine



Wake up early in the morning to get a head start on the day.
6:00AM



Prepare for your class/ seminar that you will be teaching. 7:00AM



Log on the class and teach.
9:30am



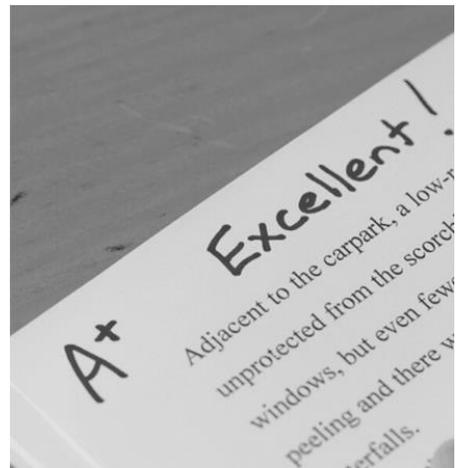
Make and eat lunch at home.
12:00 pm



Continue on your research for thesis and making what you can with what you have at home.
2:00pm



Make and Eat dinner. 7:00pm



Goes to grading papers while watching some TV. 9:00pm



Time flies so you plan to wake up early to do it. The more the cycle goes the more stressful it gets.

Primary Market Research

OPPORTUNITY SPACE



Practical



Simple



Complex



Impractical



Analysis

A lot of the products aim to one singular thing

Most products are aimed to be an add on to the already existing routine

Some smartwatches try to humanize process and or gamify sleep

A lot are twists on old beliefs or can be considered placebo

Wide range of products

- Mattress mods
- Furniture inspired
- Tech
- Simple knacks
- Scent devices



Primary Moodboards

After doing research we started to help ground an idea of what we want our solution to be/ represent in its environment.

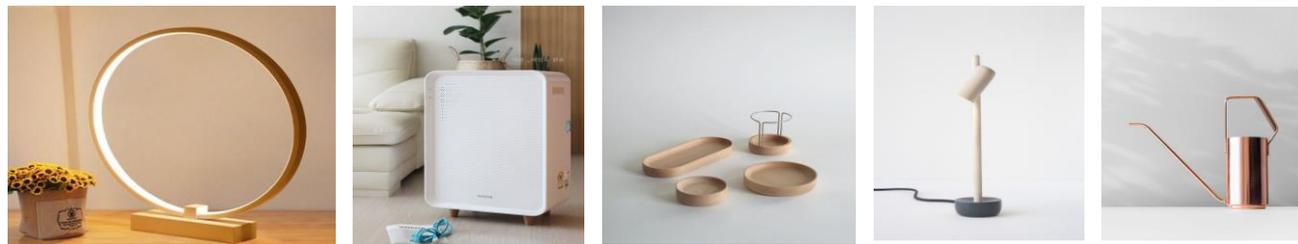
Low Tech



Understandable



Simple



Calming



Finding a Target

At this point we have finished some research and have started to zero in on a few different problems to tackle. We will decide what problem to tackle and choose a target demographic.

Importance of Sleep

We spend $\frac{1}{3}$ of our life sleeping.

REM sleep plays an important role in learning and memory function, since this is when your brain consolidates and processes information from the day before so that it can be stored in your long-term memory.



Sleep related disabilities

Daily Anxieties & Stress

- “During times of increased stress, sleep is often the first biological system to malfunction,” says Candice Alfano, director of the University of Houston’s Sleep and Anxiety Center.

Insomnia

- Trouble falling asleep, difficulty staying asleep, waking too early in the morning, or waking up feeling unrefreshed
- About 35% to 50% of adults worldwide experience insomnia

Poor Sleep Rhythm

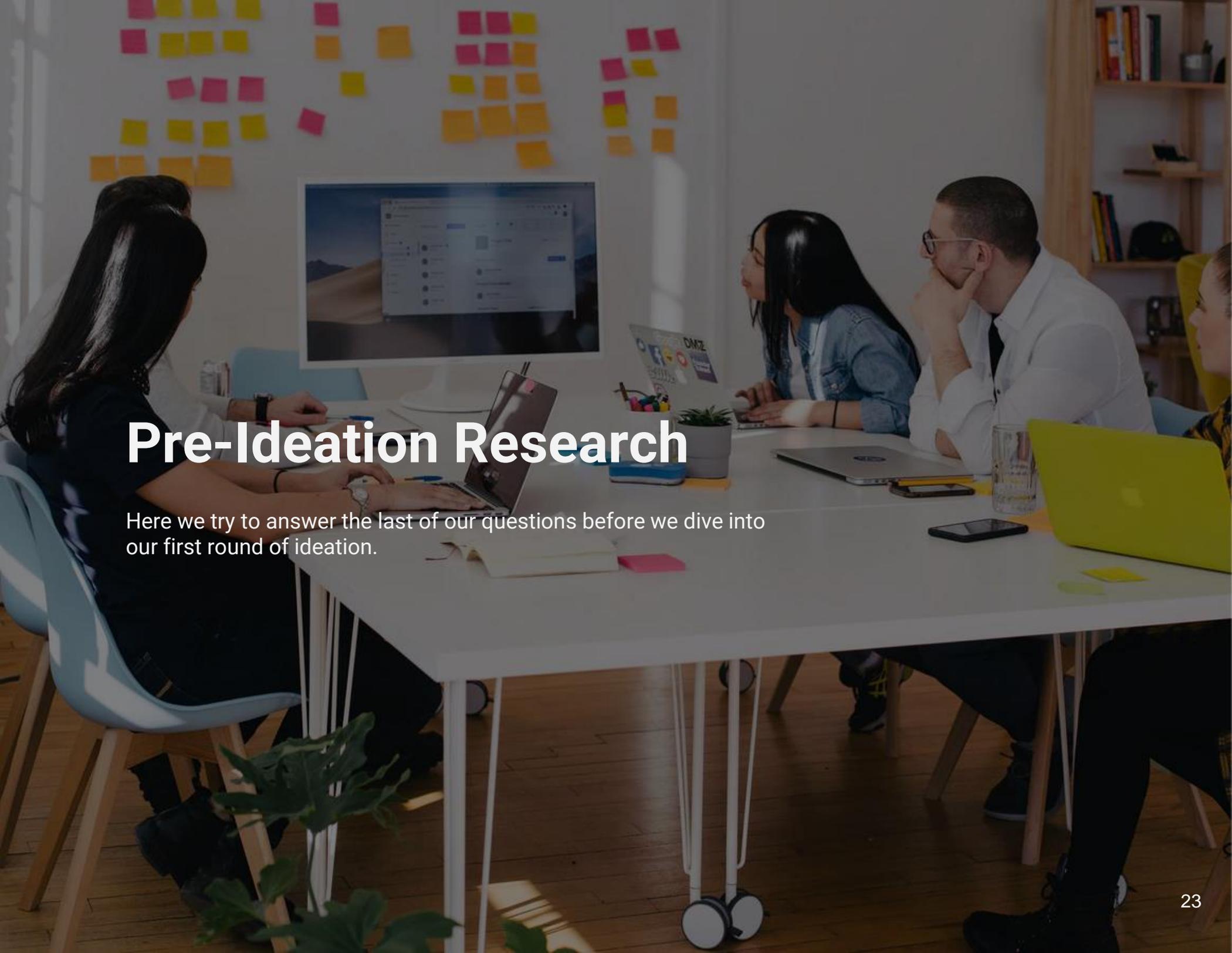
- Some sleep schedules are determined genetically according to chronobiology and based on age. Knowing your **behavioral pattern** and **circadian rhythm** can help you better understand how to improve your sleep quality.



Problem Statement

How can we make going to sleep easier by creating healthy sleep habits and routines for young people in a simple and effective way (i.e. being well rested/energized)?





Pre-Ideation Research

Here we try to answer the last of our questions before we dive into our first round of ideation.

Demographic Night Ritual

We created a base ritual to go off of that was vague enough flexibility in the first ideation phase but gave enough insight on the problem and common pain points that could be found.



8:00

Homework and/or Study



10:00

Eat Dinner



11:00

Get ready for bed and try to go to sleep near finals with all the pressure and stress

Common Treatment

Drugs

- Pills
- Vaporizers

Meditation

- Unwinding
- Relaxing
- Aromatherapy

Mental exertion

- Journaling
- Taking

Physical exertion

- Punching Bag
- Working out

Yoga

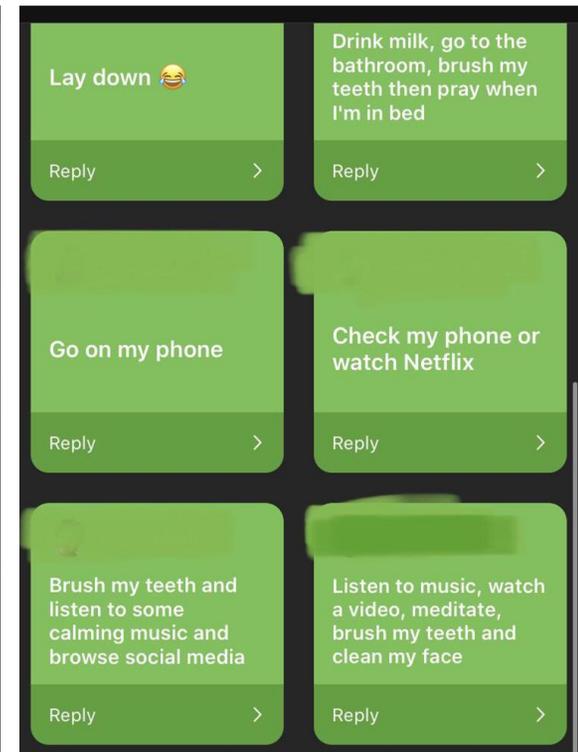
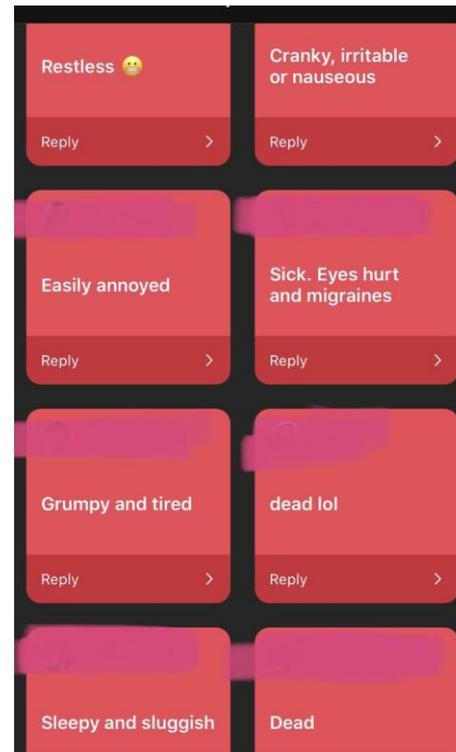
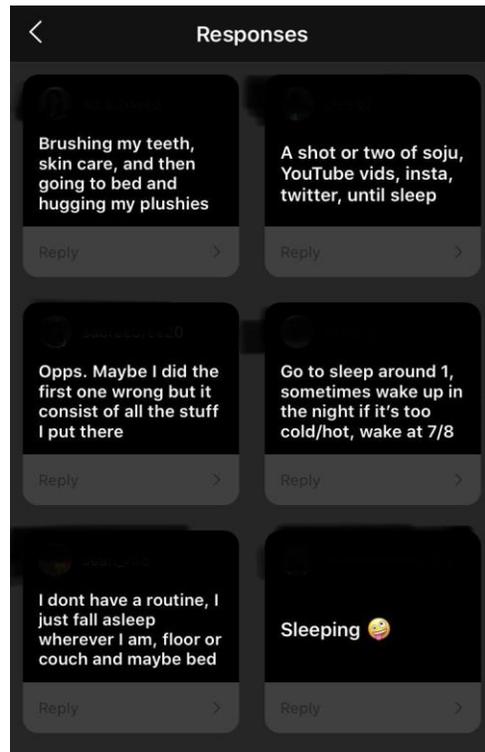
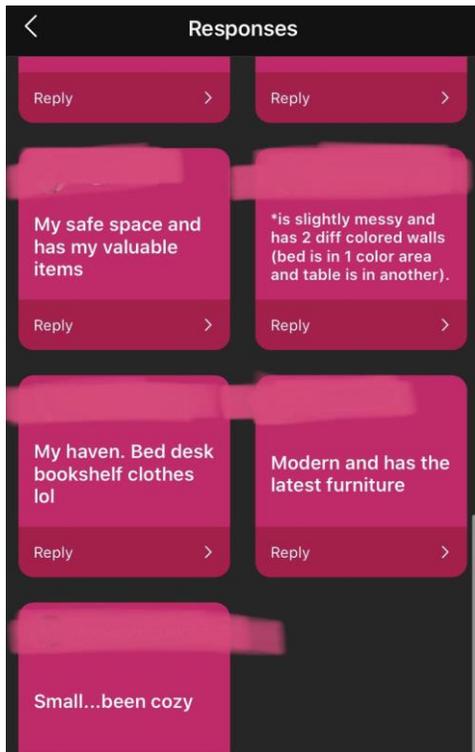
- Stretching
- Controlled Breathing

Cognitive Behavioral Therapy

- Setting a daily schedule for a person and train their brain to go to sleep at a certain time

Public Survey

We created an instagram survey to ask a larger collection people on what they struggle with and how they go about their sleep ritual.



Phase 1

First round Ideation following a few themes to help guide us but also keeping it broad. We kept it to Meditation, Behavioral, and Devices.

Brainstorm

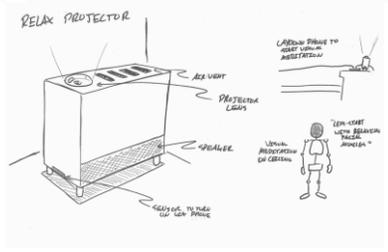
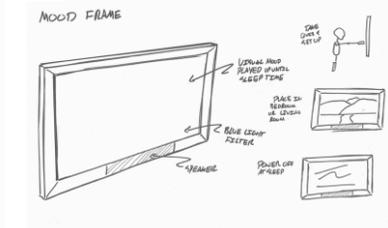
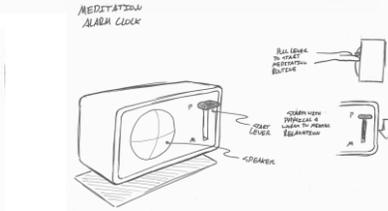
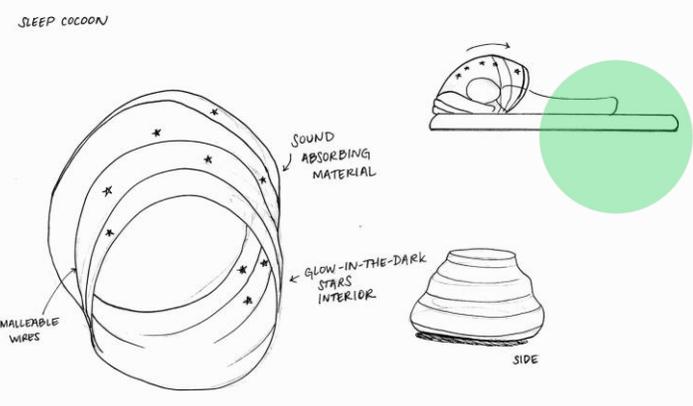
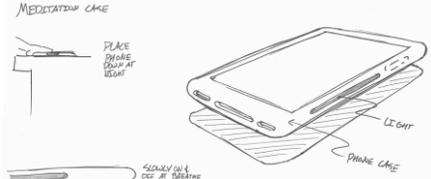
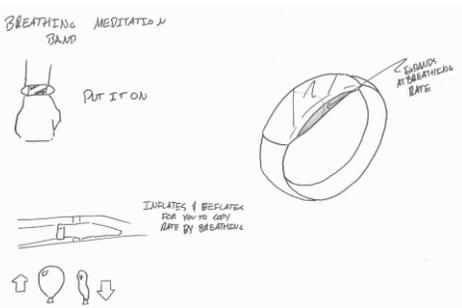
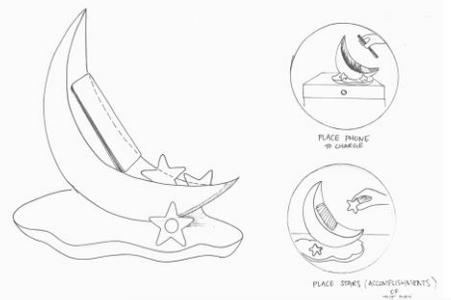
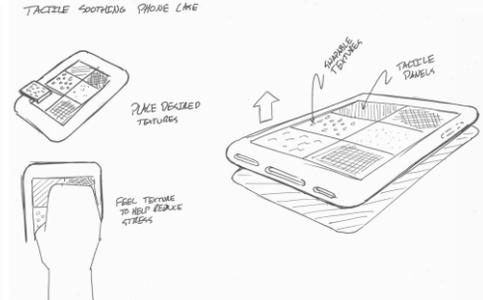
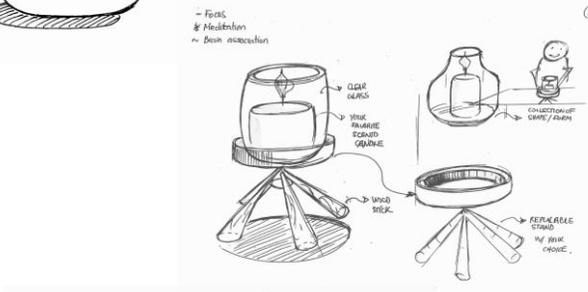
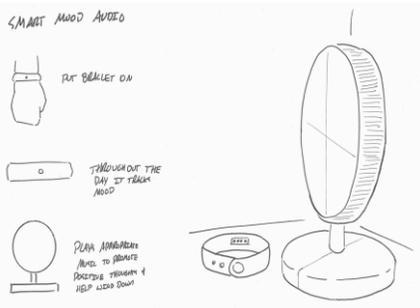
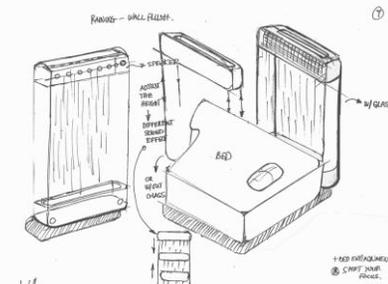
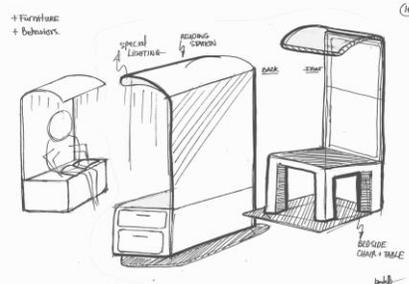
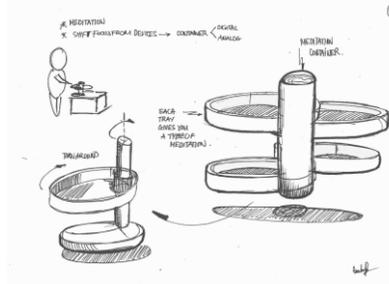
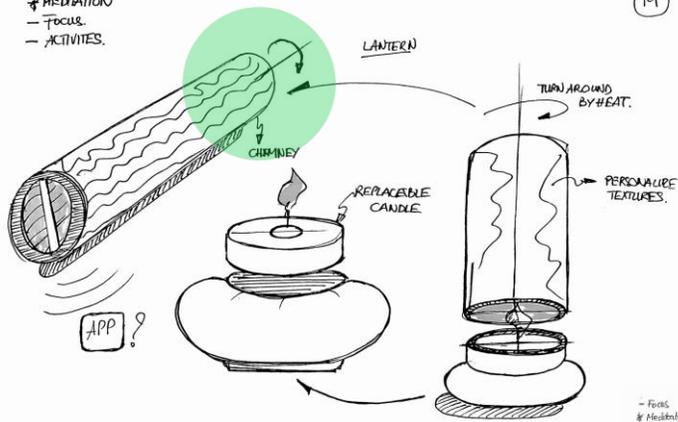
We started off with a mental dump of any idea, ordinary to crazy, and put them down in hopes for a spark then dove into more refined ideas.

The brainstorming board contains the following ideas:

- Bracelet helps to destress
- Posture corrector
- Phone case that massages you for sleep
- Sleep slippers that glow when it's time to sleep
- Lullaby water bottle
- Baby sleep mobile for adults
- Sleep Toilet
- Relaxing tooth brush
- Sleep med vaporizer
- Phone slide for /onto bedside table
- Ceiling projector ceiling
- Wall speaker
- Holographic display curtain
- Diffuse the clock alarm
- Clap off night light
- Sleep companion app
- Emoticon reflects your mood/sleep
- Shocking case
- Shoes help get into bed
- Mind Stimulating Sweat band
- Phone glove
- Light up bedroom door frame
- Device "spill your worries"
- Down bottle
- Wall frame
- Meditation ball
- Bed side radio
- Encasing Furniture
- sleep massage bedside table tool
- A cup of water as phone holder
- Dream catcher
- A/C control panel
- Smart opaque glasses
- Midnight snack portion ware, tells you what to have as a midnight snack to eat healthier and make you sleep
- Smart Thermostat
- Sleep mask with REM tracking
- Plant pot speaker
- Pillow that shrinks the longer you take to sleep
- Digital windchime
- Light switch
- Bedside assistant
- Sleep Tea machine
- Water bottle night light
- Smart Assistant
- Mirror
- Light stick
- Beanie
- Calendar
- Light up mirror/vanity?
- Mirror that reflects your sleep vitals
- Furniture
- App
- Floor Lamp
- Sleep schedule board
- Sleep blanket
- House Sleep mode lock
- Phone Hub
- Pillow
- Phone ring light
- Sleep clock
- Headphones
- Smart Frame
- Ceiling lamp + diffuser
- Tower fan
- Smart Bulb
- Diffuser Pillow
- Room Sun Lamp
- Daily sleep diagnosis device
- Candle stand
- Sleep dock for phone
- Clock
- Clock that shows your sleep hours

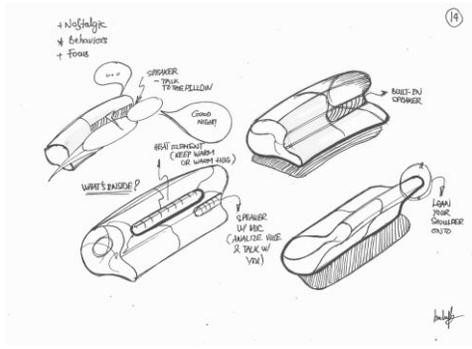
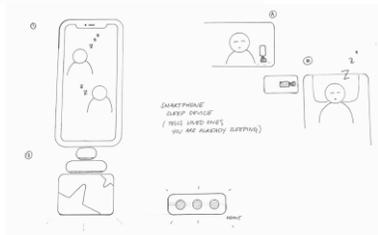
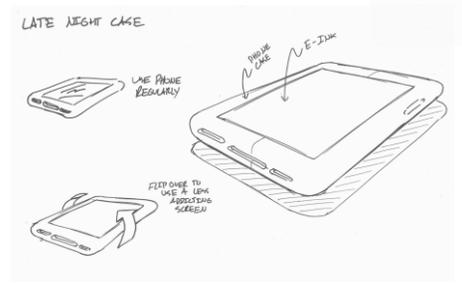
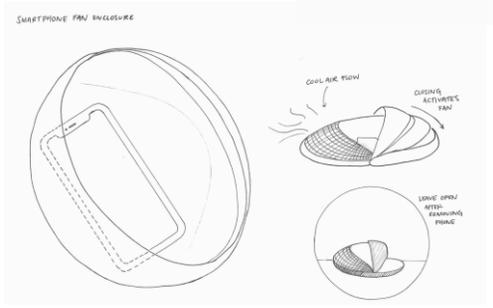
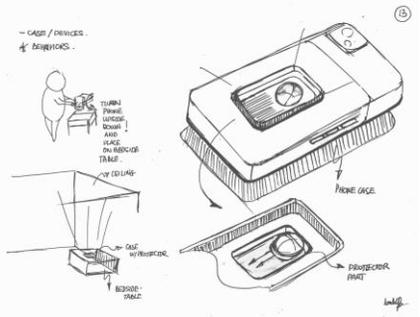
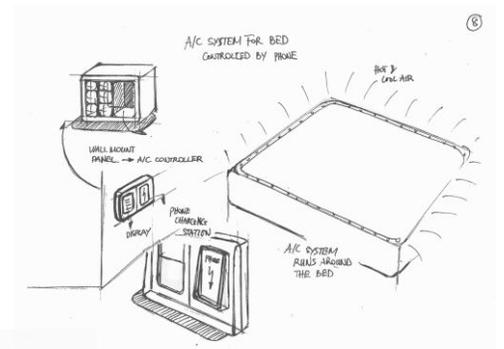
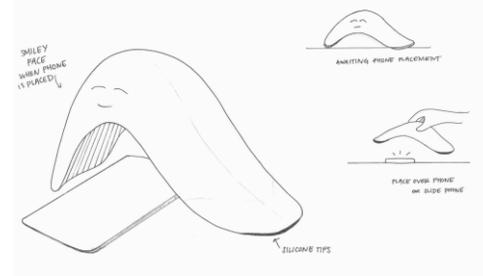
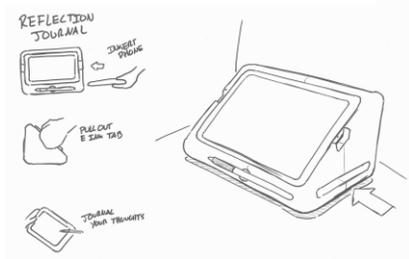
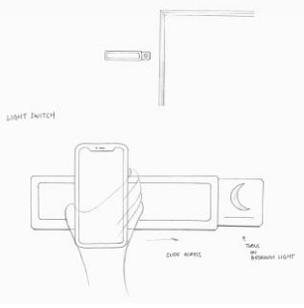
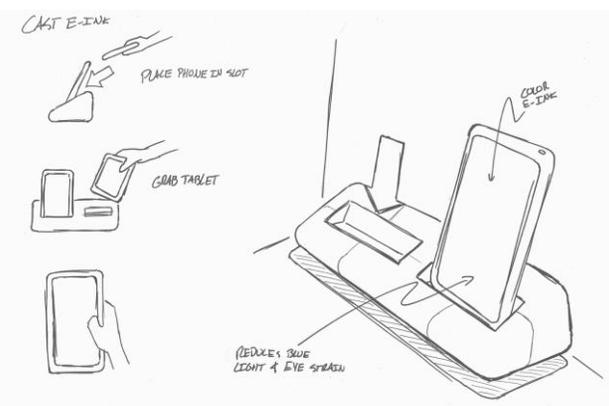
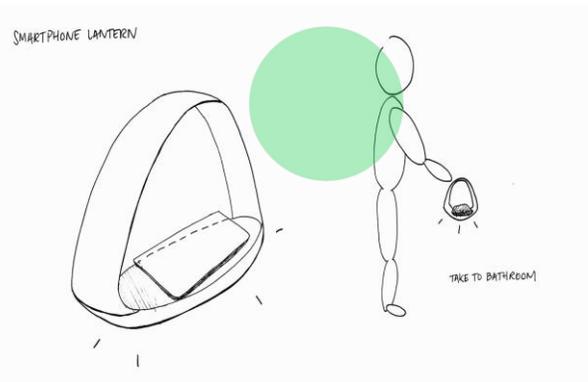
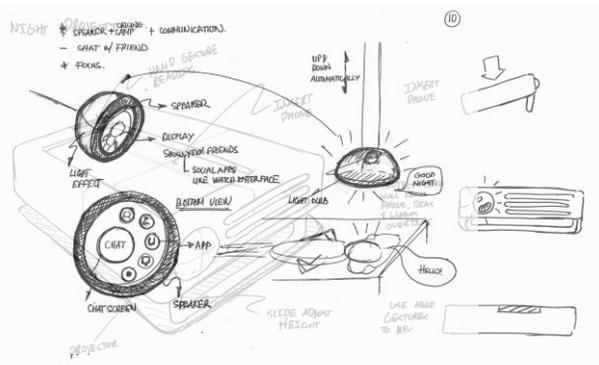
- MEDITATION
- FOCUS
- ACTIVITIES

19



Here we were designing with a focus in encouraging Meditation. Some of the designs we were leaning towards were a soothing candle with a patterned shade to help a user relax and a bed canopy to isolate the user and let them have peace and alone time.

Meditation



Here we were designing with a focus in keeping technology distractions away. After creating some concepts we found that we were focusing too much on the devices as if they are the only problem.

Devices

Interview with Sleep Doctor

After our first round we met with a Sleep Doctor, Dr Jerrold Kram, who leads sleep research around the US. We asked him questions on sleep to help guide our design process and research.

Some of the main points of the interview were:

- Sleep can depend on **Genetic Patterns**.
- **Dimmer** is the most powerful tool to help patients sleep.
- Winding down is super important to slow down heart rate and mind.
- Late night lights reduce the production of **melatonin**.
- Everyone has a different sleep rhythm called Circadian Rhythm that is hard to change

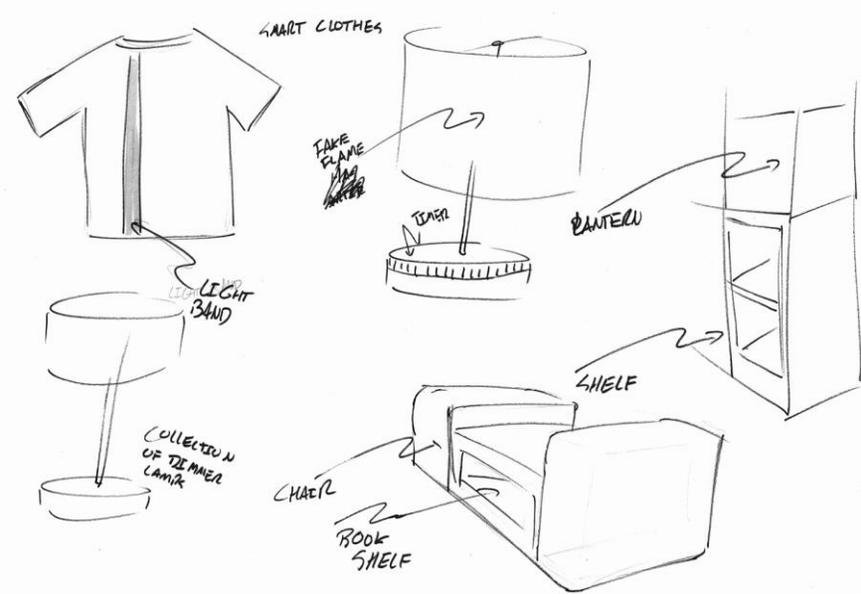


Post Interview Research

After meeting with Dr Kram, we went into soe deeper research and checked out some apps he had worked on and took down what they had done to those who suffer from poor sleep.

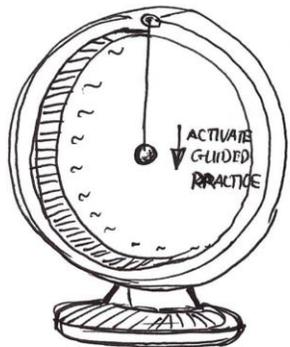
- Guided imagery relaxation
- Natural ways to boost melatonin production:
 - Increase natural sunlight exposure (in the morning)
 - No artificial lights at night.
 - Keep your bedroom dark/dimly lit.
 - Deal with stress, keep stress levels low at night.
 - Cut down on caffeine intake - drink water instead.



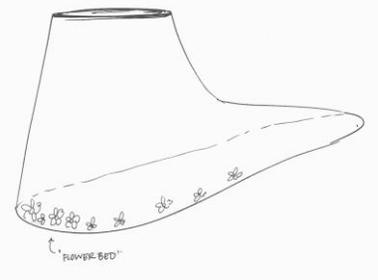
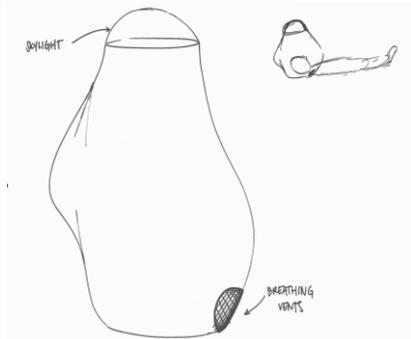
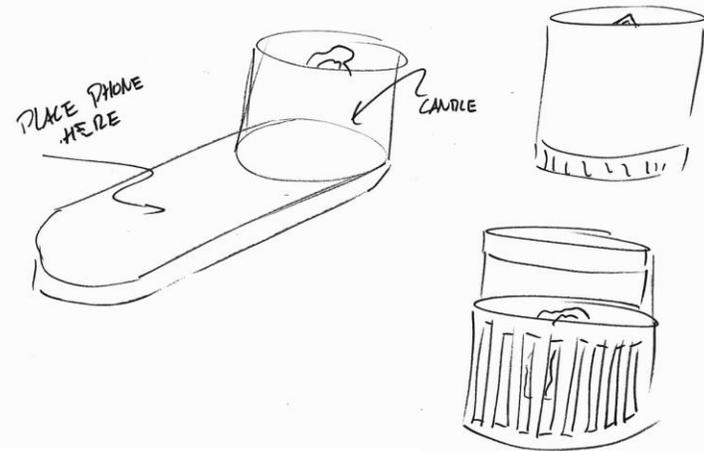
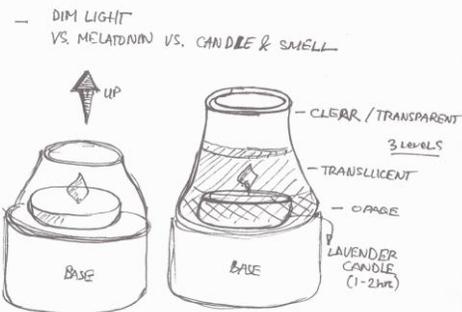
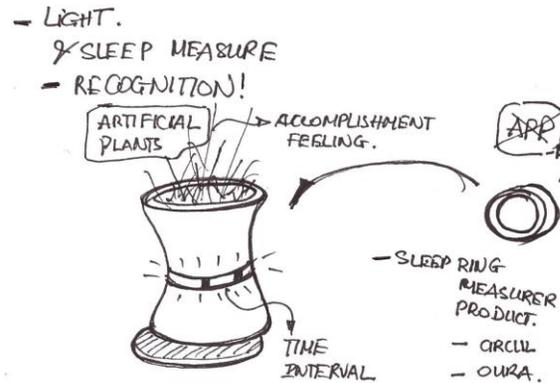


- GUIDED IMAGERY? ← PRODUCT?
- MINDFULNESS PRACTICE

~~WORKSPACE~~

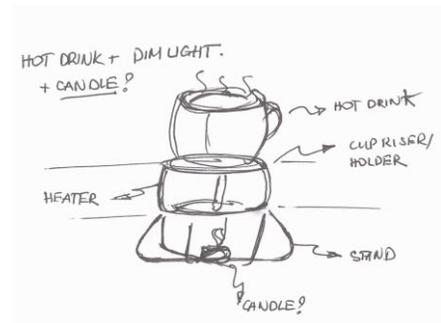


LOOKS LIKE DYSON FAN
GENTLE WIND



We went ahead and made a few thumbnail sketches to capture ideas before going into the next round while the information was still fresh in our minds.

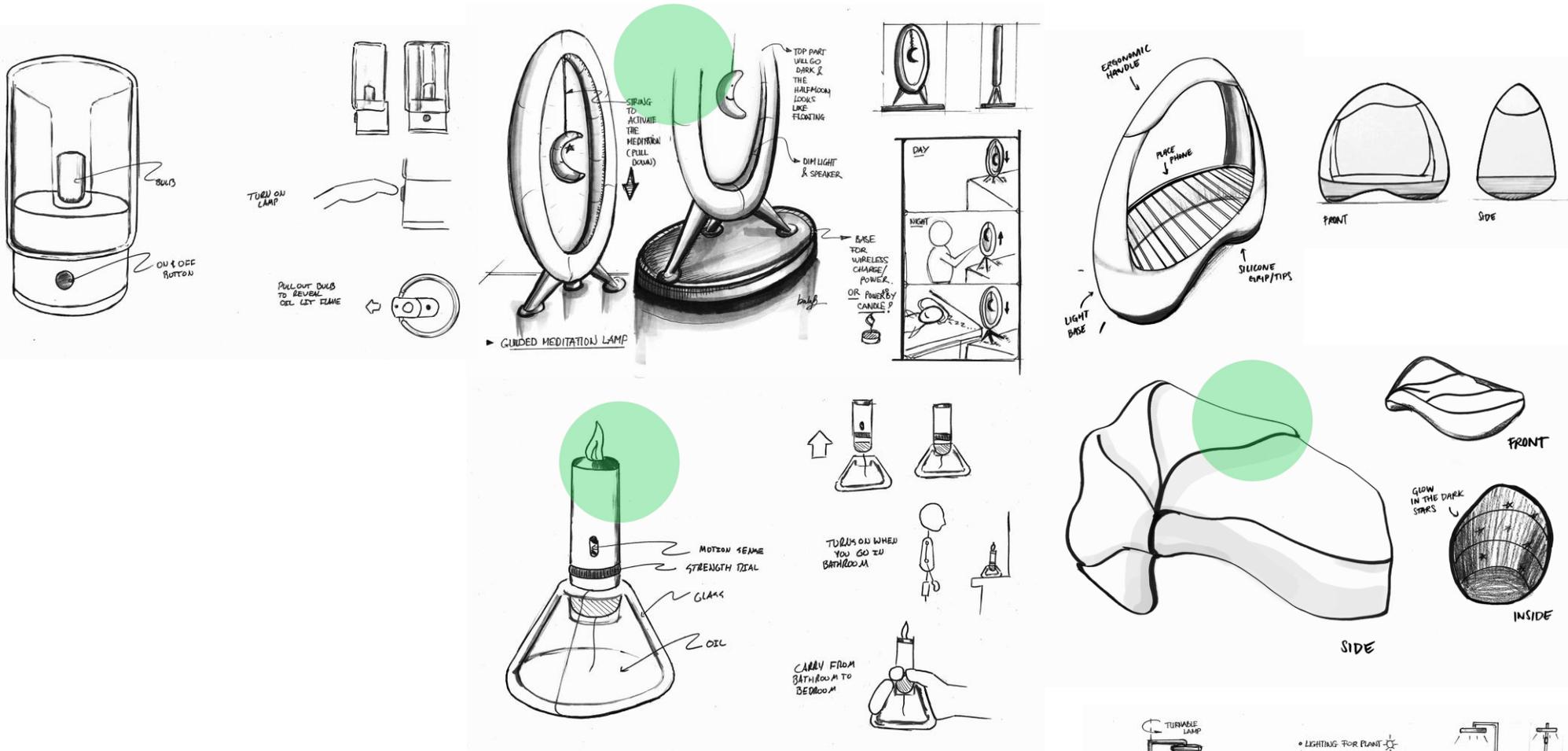
Post interview Thumbnails



Phase 2

At this point we have a done a lot of research and a round of ideation and it was time to narrow down to 6 new and improved concepts.





We decided to go with more of an emphasis on habits, each has a different focus. Some were meant to help relax via, controlled breathing or by mentally isolating yourself from your environment. And another meant to keep you from turning artificial lights, keeping melatonin production high.

Ideation



We went ahead and prototyped them all to showcase how they would be used and tried to use them for a day. By doing this we were able to knock out some ideas and find possible problems with each concept. With this testing we were able to build upon the user experience.

Mock Ups

Human Factors and Safety

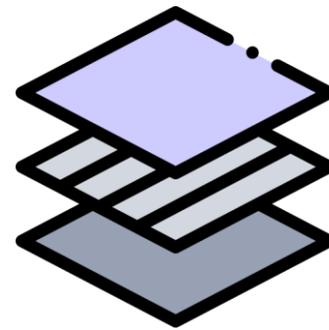
Since we were beginning to go into higher fidelity ideation we had to remind ourselves of a list of things we need to keep in mind.



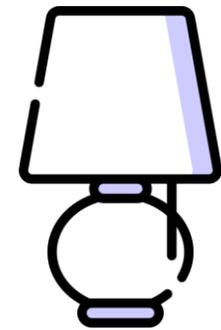
Fire Precautions



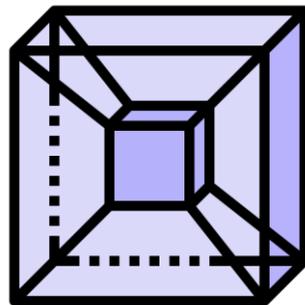
Handle Sizes & Grips



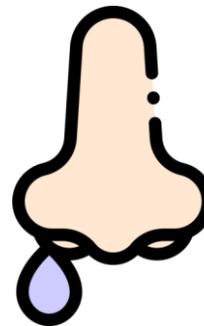
Safe Materials



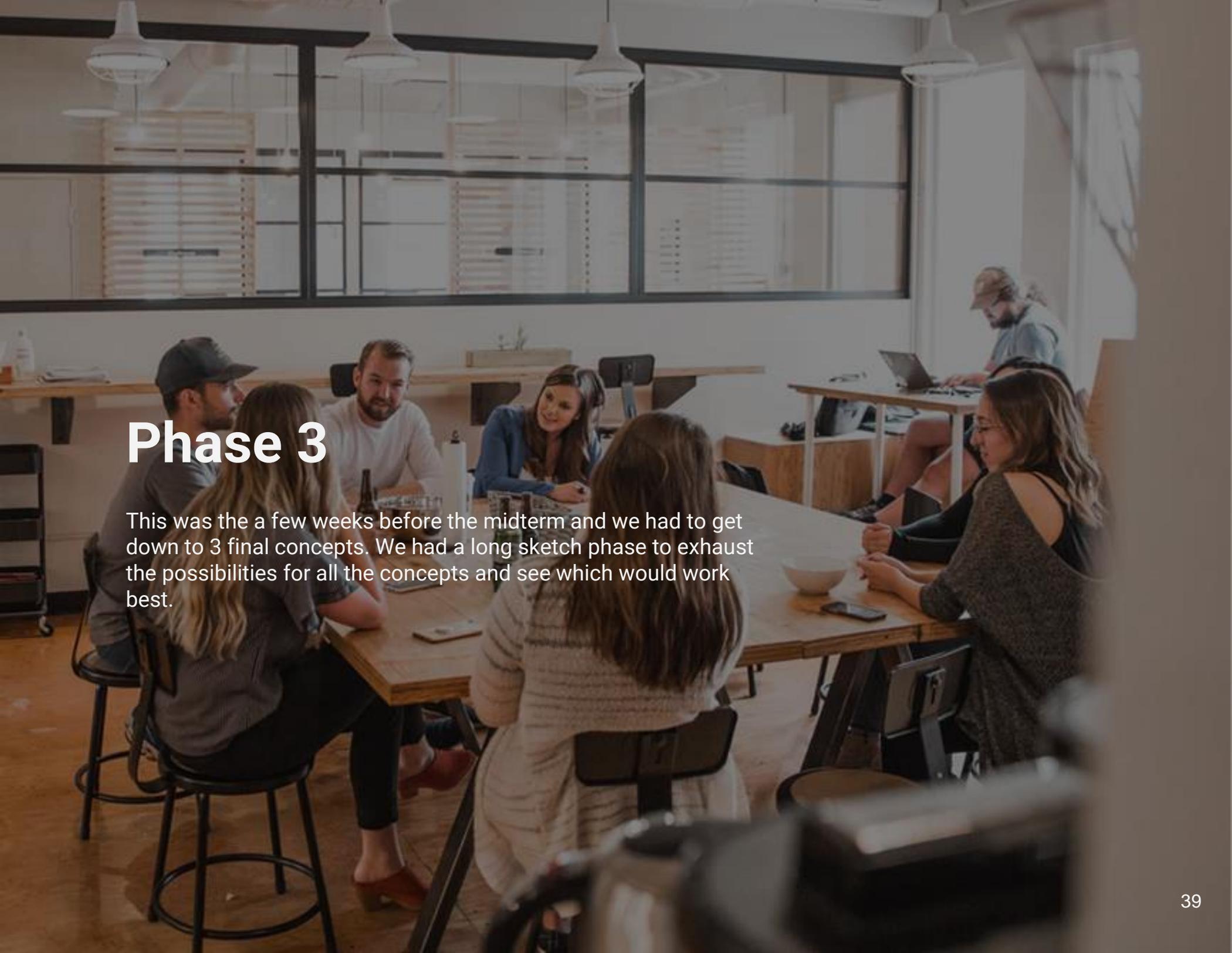
Light Sensitivity



Environment
Dimensions



Allergy

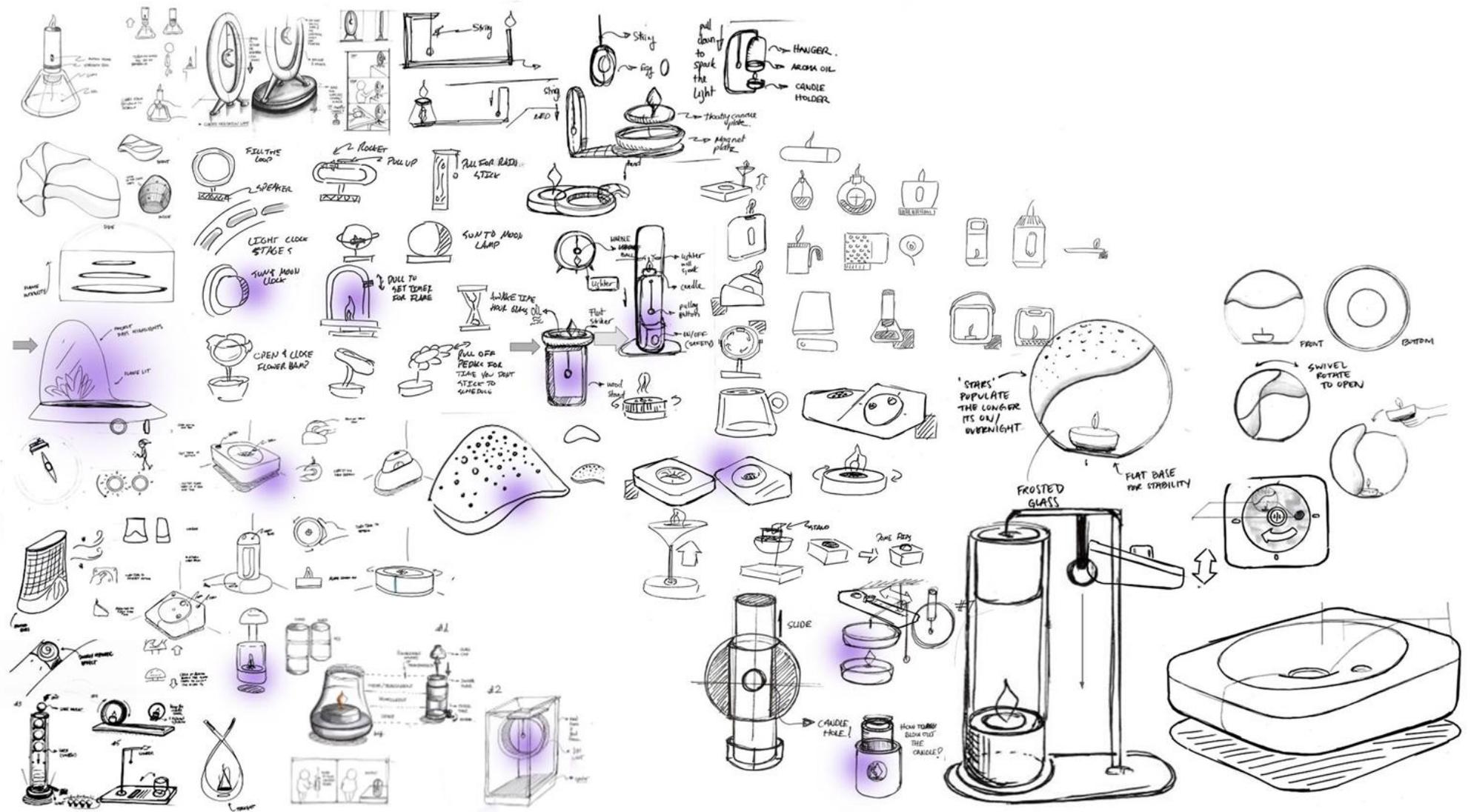


Phase 3

This was the a few weeks before the midterm and we had to get down to 3 final concepts. We had a long sketch phase to exhaust the possibilities for all the concepts and see which would work best.

Ideation 1

After Phase 2, we went deep into ideation finding 3 main directions that were the most part had features we found to be important and refined the form, user experience, and most importantly, how its used.



Concept 1: Turn Dial to Set Desired Time/Setting

When dial is turned, the torch rises and falls and dims over a span of 10-20 minutes



Concept 2: Pull down the string and then release!

The top cover goes up.

It moves down slowly in half an hour or an hour.

It covers the candle.

Finally oxygen is used up & the flame goes out.



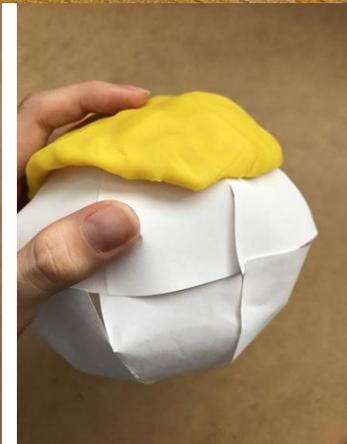
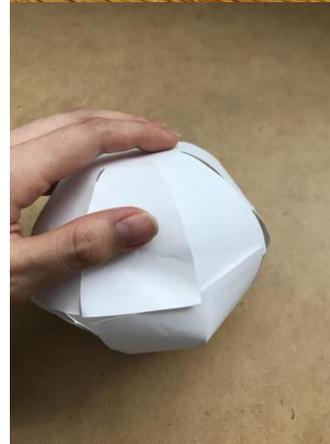
Concept 3: Rotate lid to enclose flame

Rotate lid cover open to insert candle

It moves down slowly in half an hour or an hour.

It covers the candle.

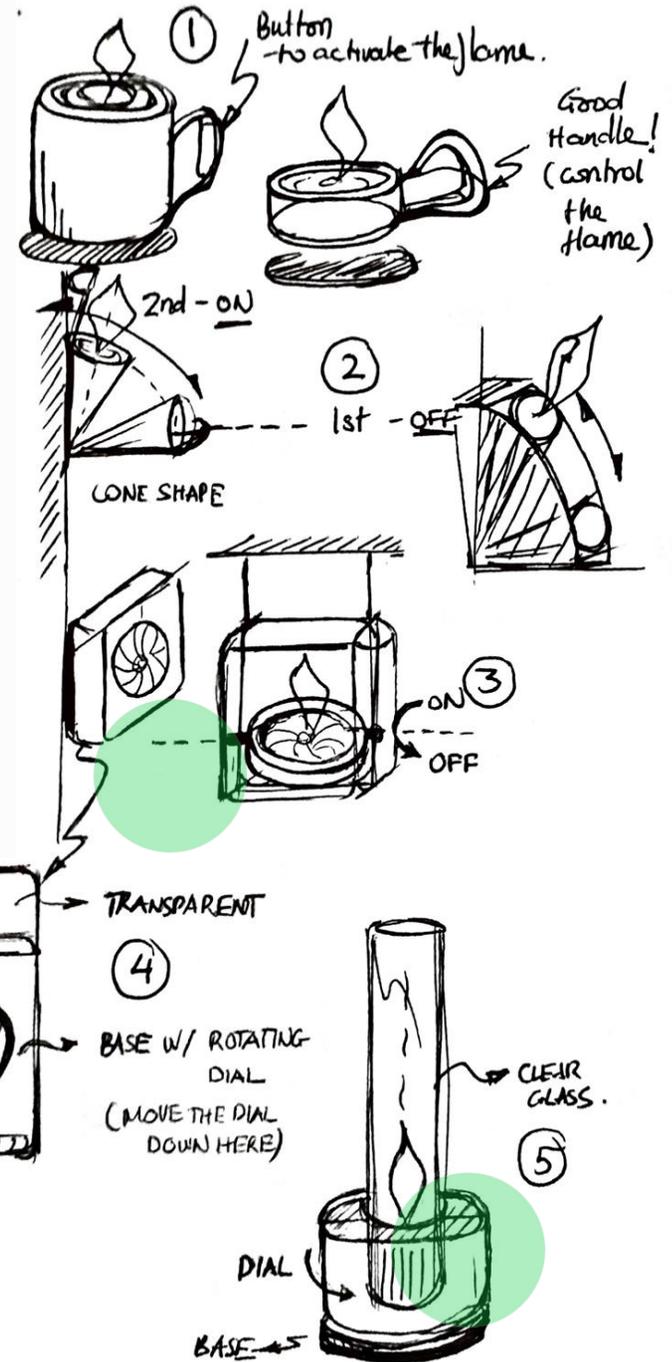
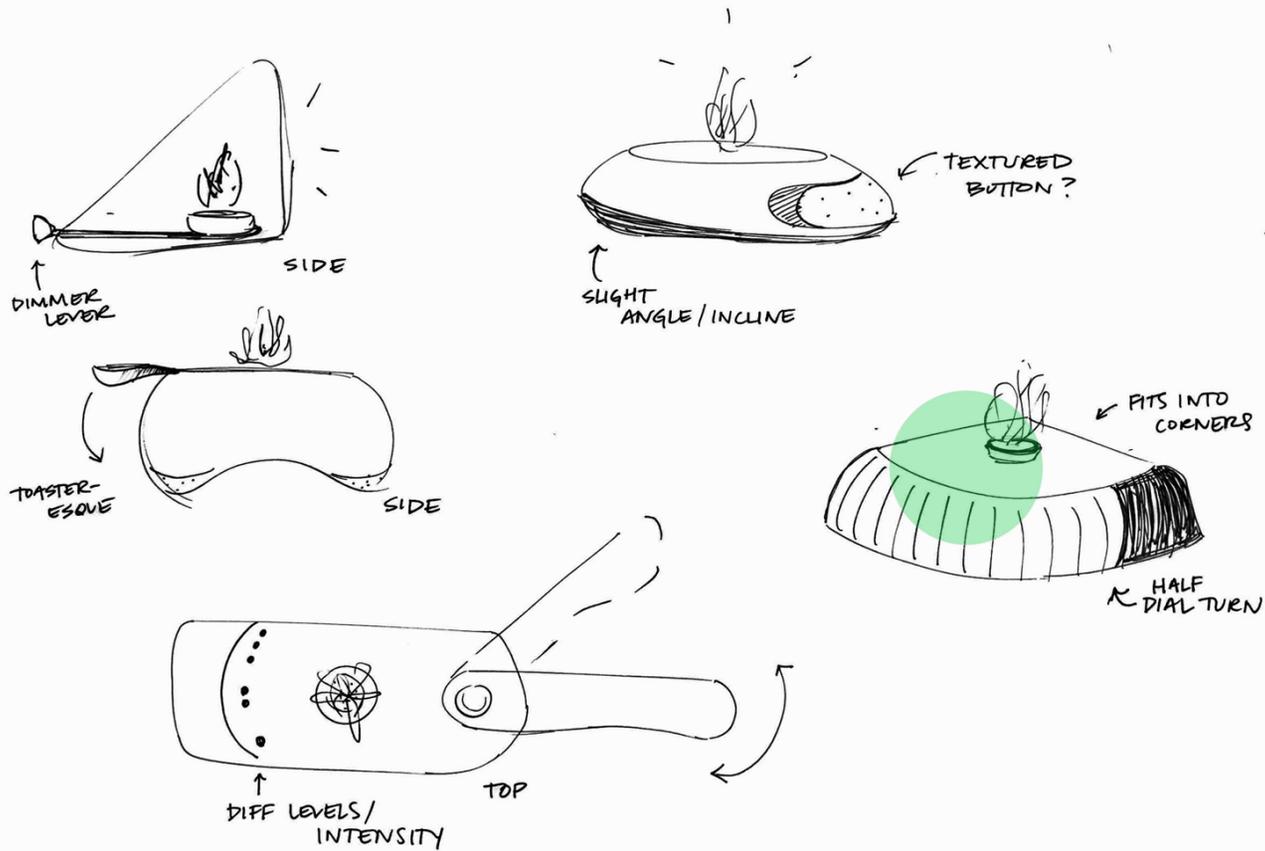
Finally oxygen is used up & the flame goes out.



Importance of Candles & Fire

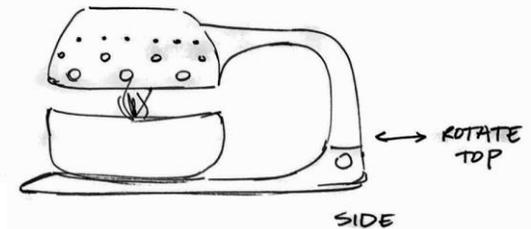
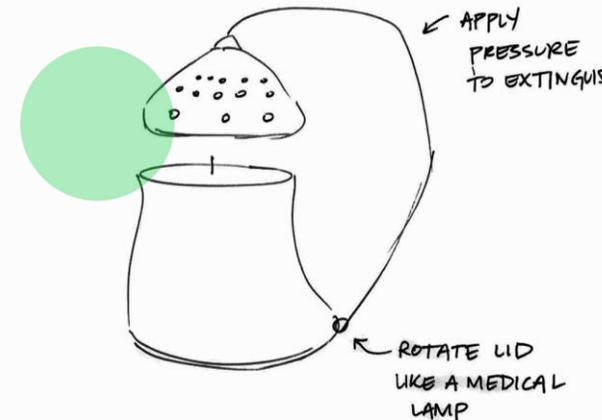
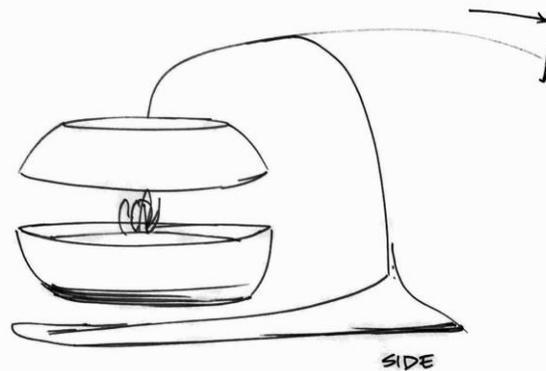
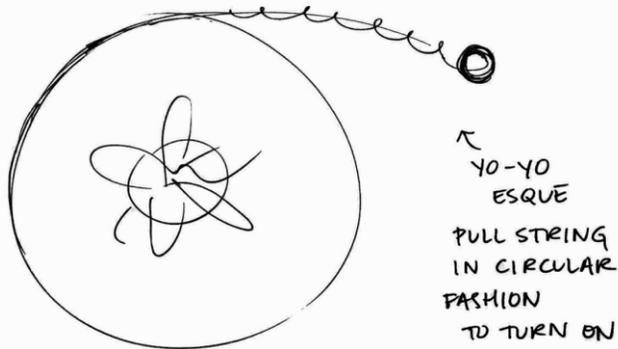
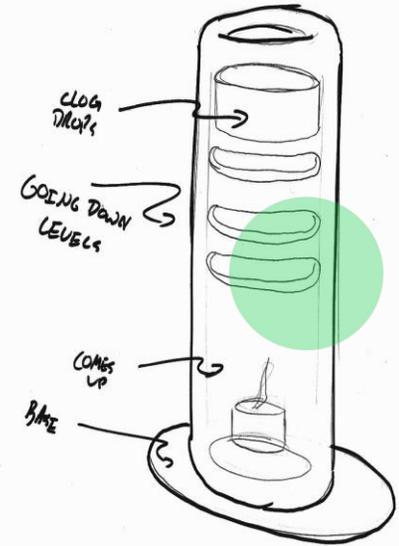
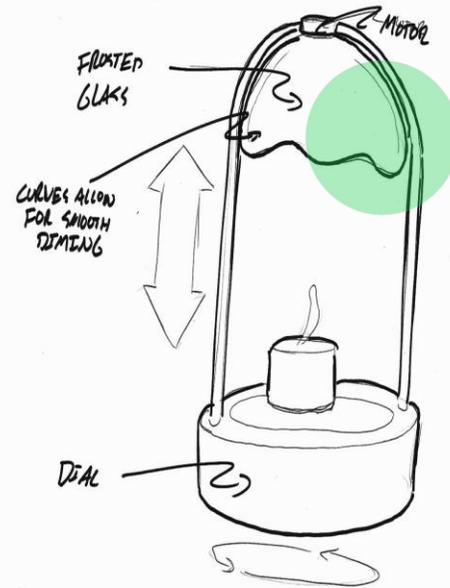
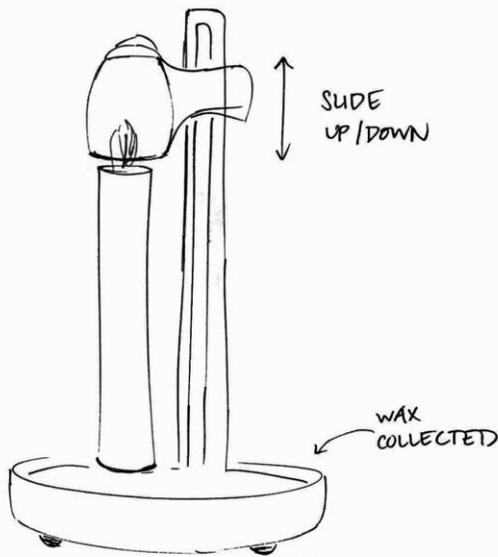
- Improve mood & increase focus.
- Allows you to set morning and night ritual.
- Provide more restful sleep.
- Known to alleviate stress.





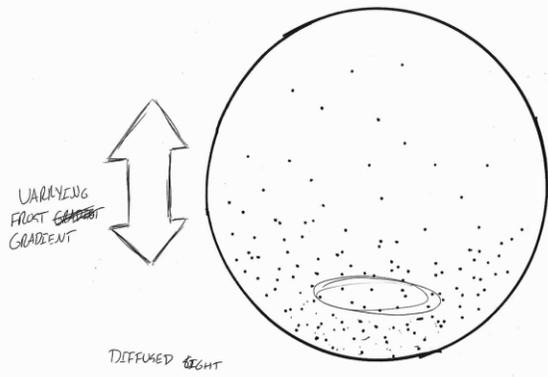
For the first concept it had issues with both where it lived and how to incorporate the flame in a safe and sound way. We found several elements we found useful and used them to make the next main concept.

Ideation - Concept 1

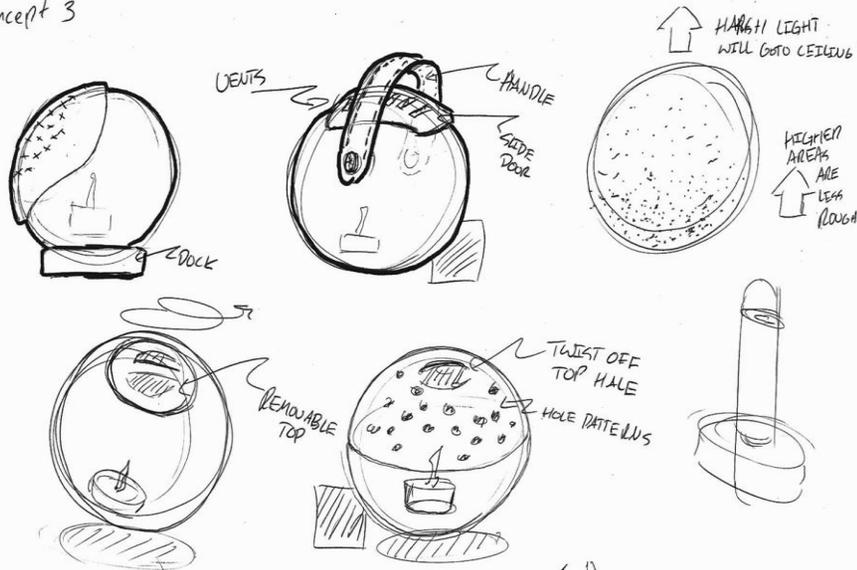


For this concept the main problems we could have had with how it's used and its form. We felt that it was too industrial feeling and we were looking to bring back that clammy feel.

Ideation - Concept 2

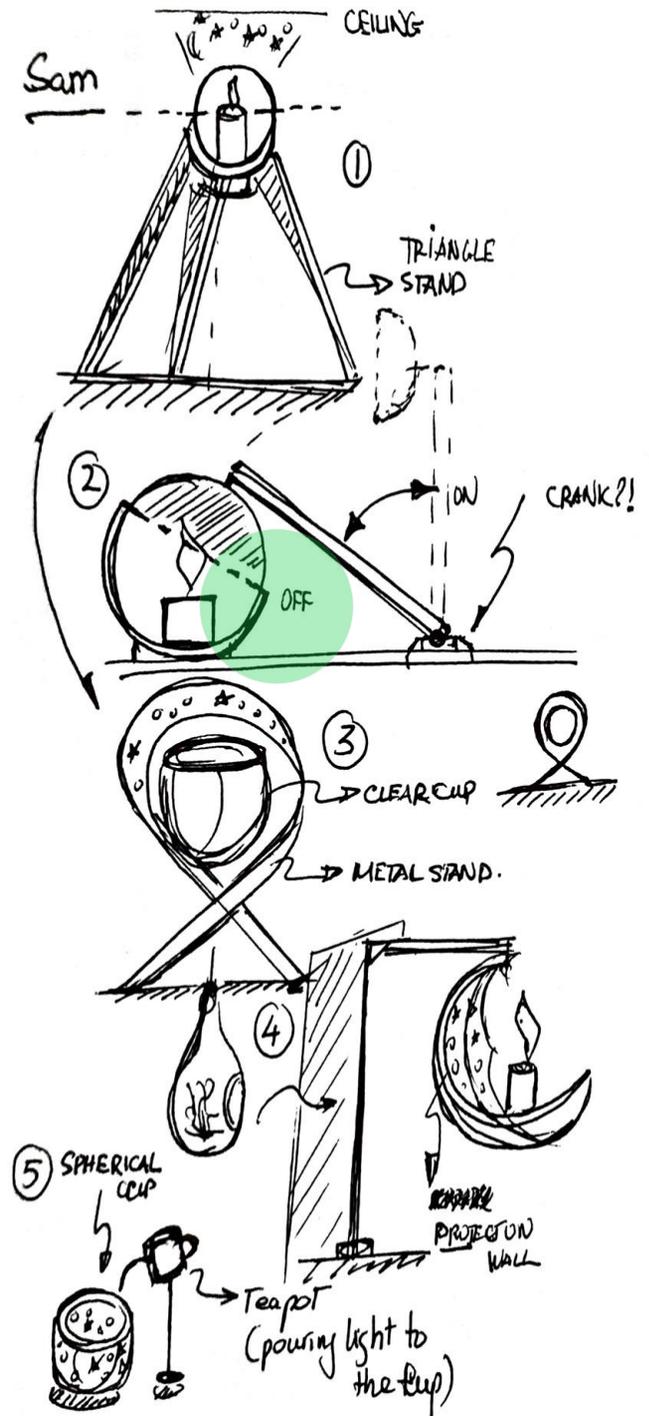


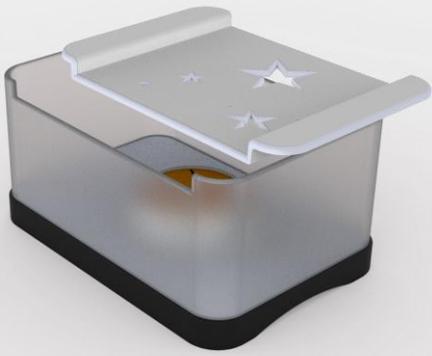
Concept 3



This concept was suffering from too little going and how it can distinguish itself from a bowl. A lot had to do with how people interact with it and making sure there a positive benefit and having it being safe.

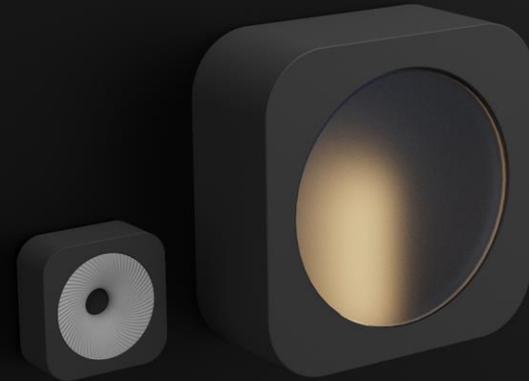
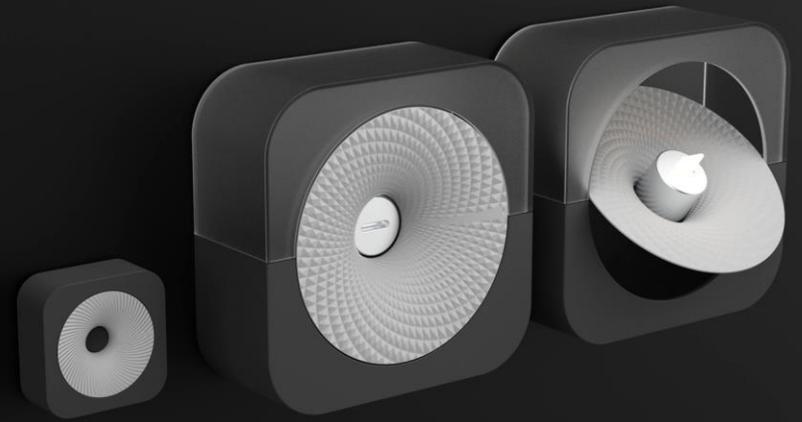
Ideation - Concept 3





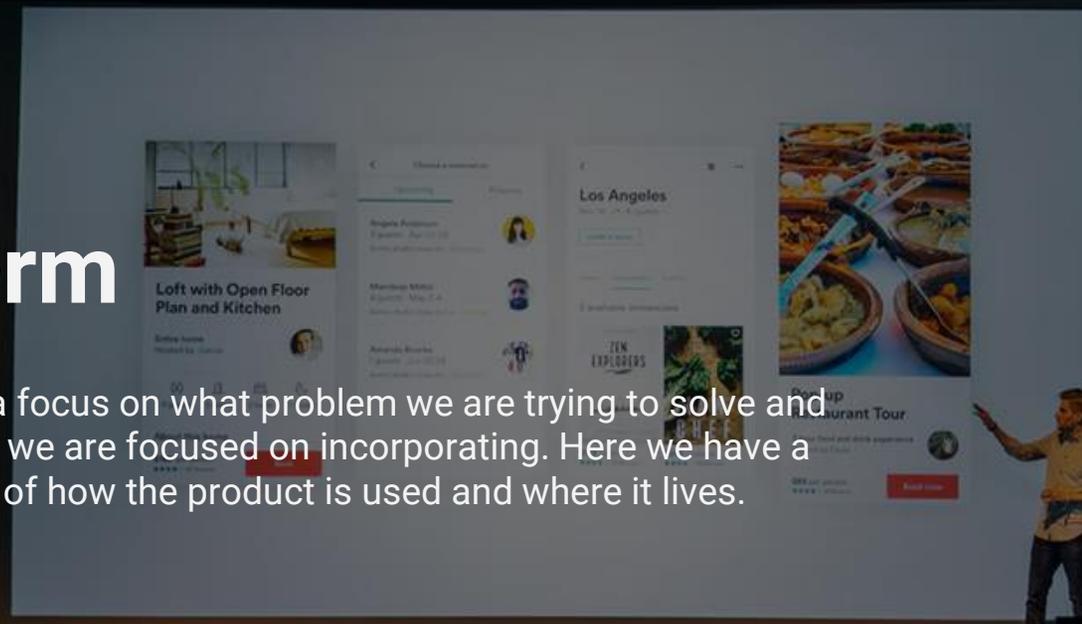
We took elements we found and tried to merge them into new concepts. From here we went deep into the details resulting in our midterm concepts.

CAD Mockups



Midterm

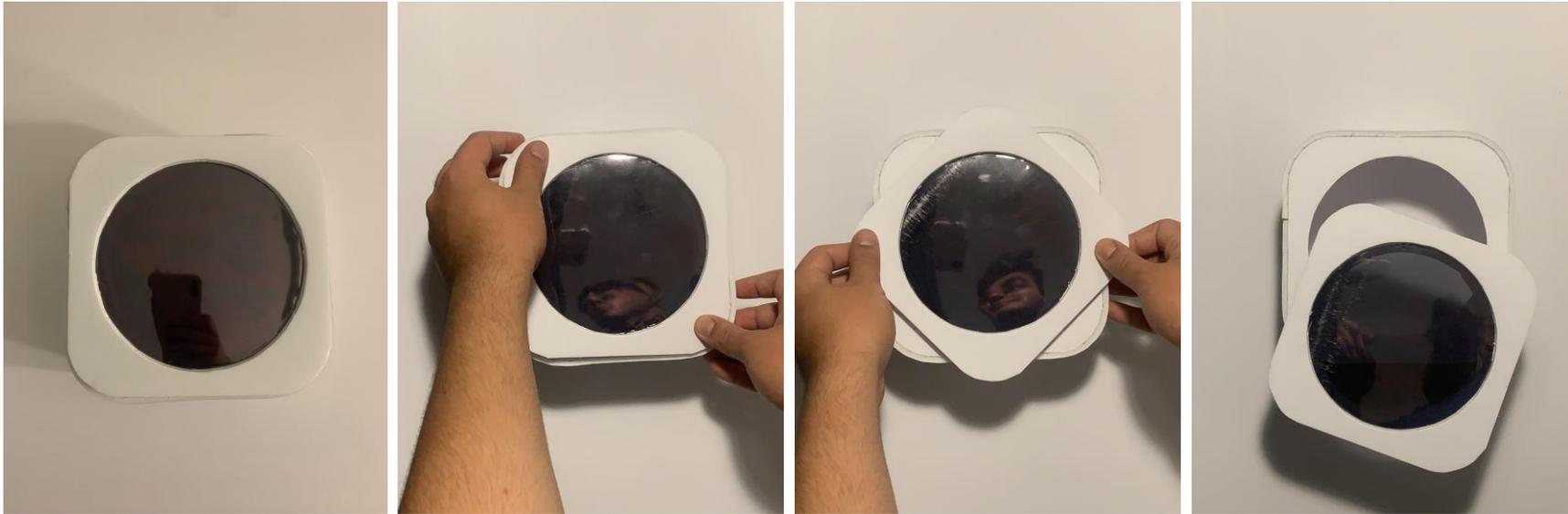
Here we have a focus on what problem we are trying to solve and what elements we are focused on incorporating. Here we have a clear idea also of how the product is used and where it lives.



Midterm Concepts

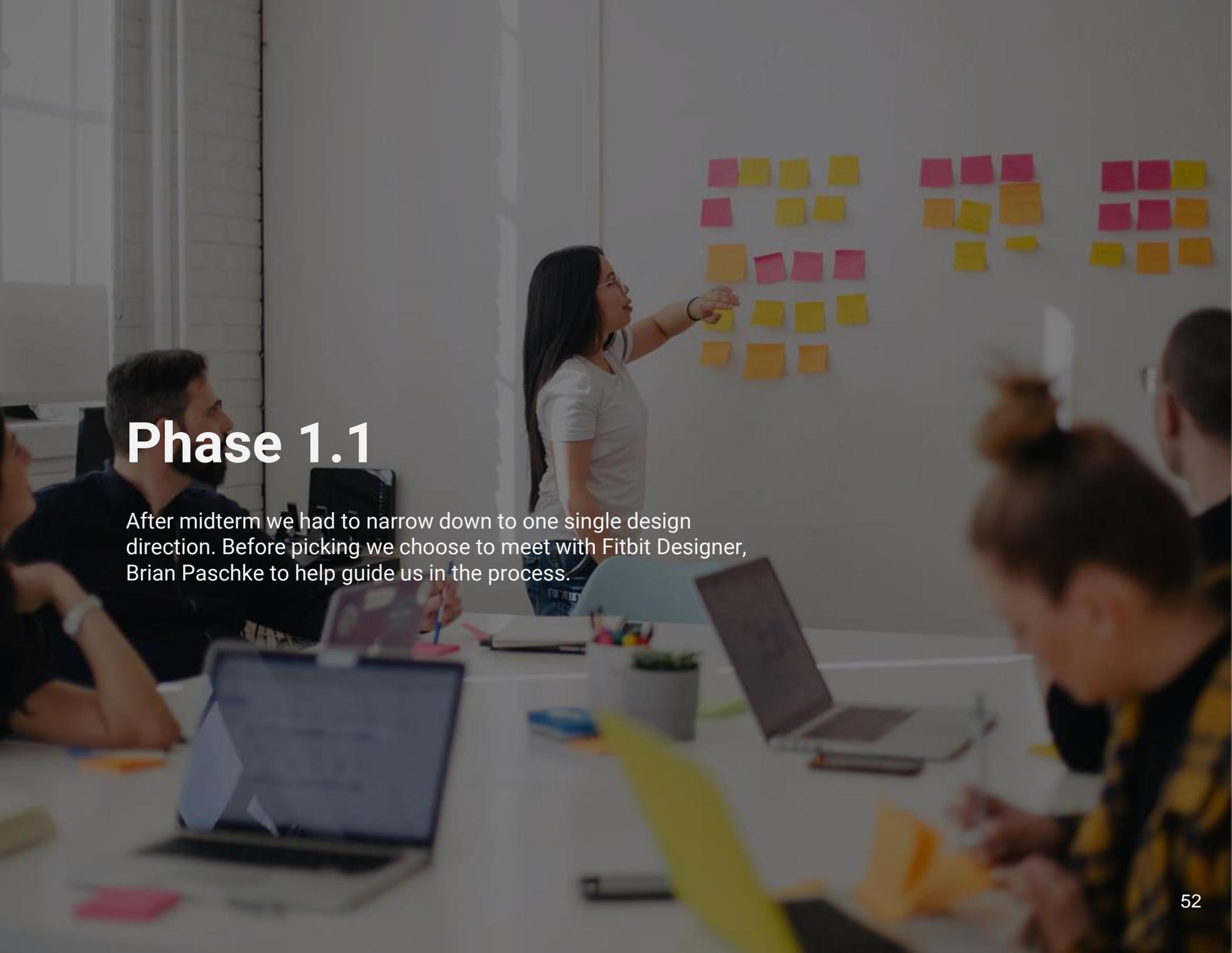
These were the 3 main concepts to the midterm. The first concept lived on the wall and its aim was to reduce artificial light use at night and also dimmed over time similar to a sunset. Concept 2 & 3 lived on bedside tables and their aim was to provide soothing natural lighting that also dimmed a set time.





We made quick mockups to show how it would be used and also include how you may interact with it when needing to refill or repair certain parts

Mock Ups

A woman with long dark hair, wearing a white t-shirt, stands in a meeting room pointing towards a whiteboard. The whiteboard is covered with numerous colorful sticky notes (pink, yellow, and orange) arranged in a grid-like pattern. Several other people are seated around a table in the foreground, looking towards the whiteboard. The room has large windows on the left side, and the overall atmosphere is professional and collaborative.

Phase 1.1

After midterm we had to narrow down to one single design direction. Before picking we choose to meet with Fitbit Designer, Brian Paschke to help guide us in the process.

Meeting with Fitbit Designer

After meeting with Brian there were a few major takeaways that we needed to think about.

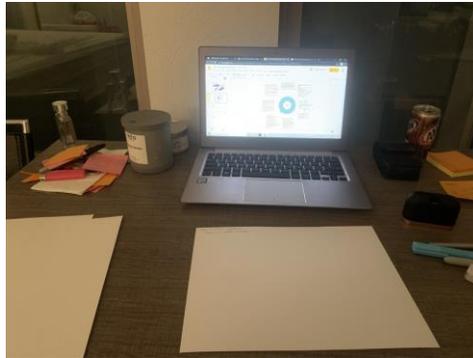
- Go deeper in defining the use case and make it really detailed.
- Decide whether you want it to be digital or analog.
- Choose which best serves the use case & user

Self-study Routine

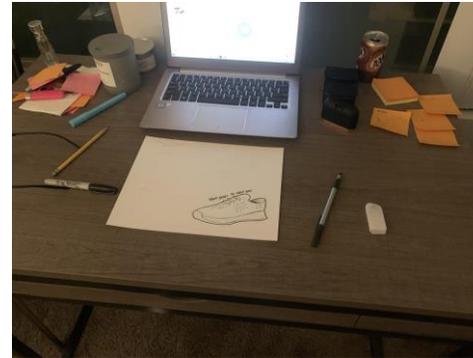
We each kept record our lives leading up to going to sleep. This is just one example of one of our routine. This worked since we were our main focus demographic.



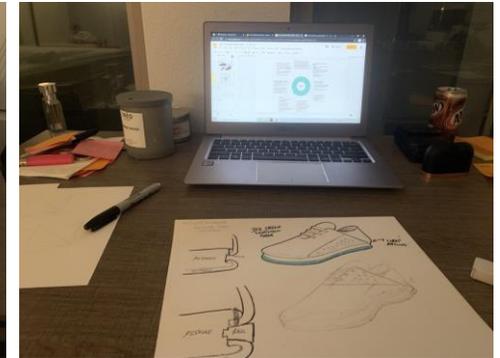
9:00 PM Ate Pizza



9:30 PM Sketching



10:00 PM Sketching



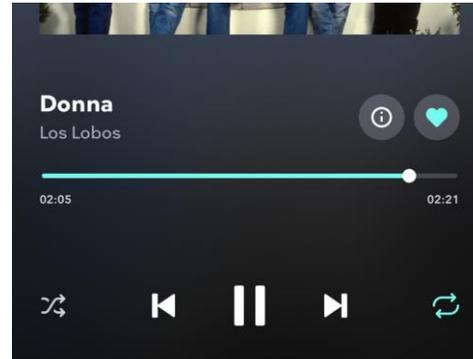
10:30 PM Sketching



11:00 PM Scan Sketches



11:30 PM Get Ready for bed



12:00 PM Listen to Night music

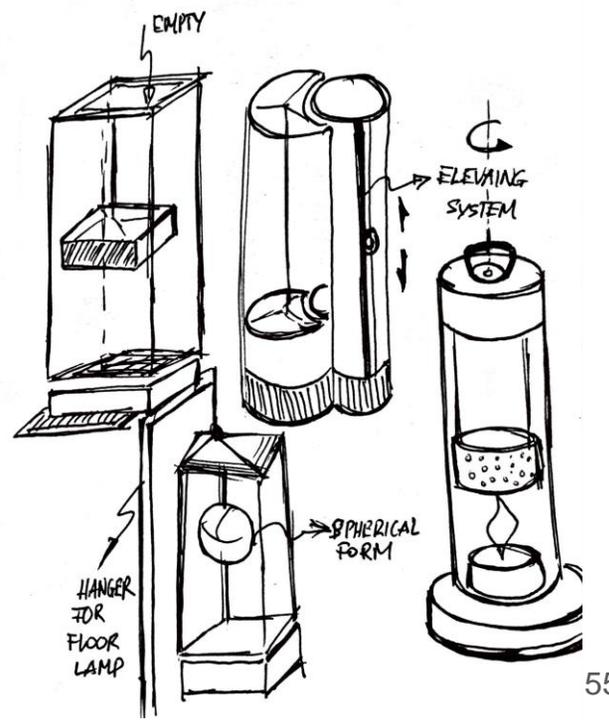
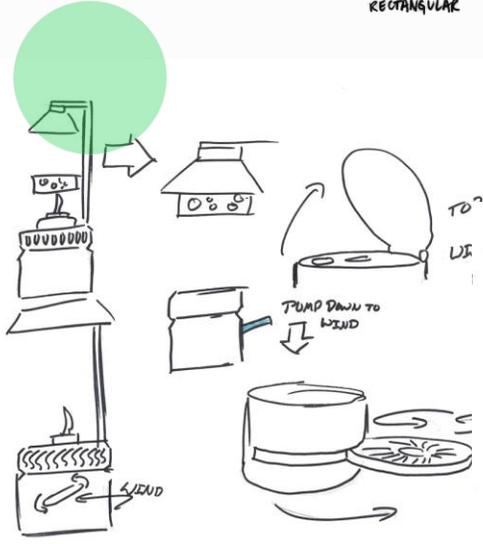
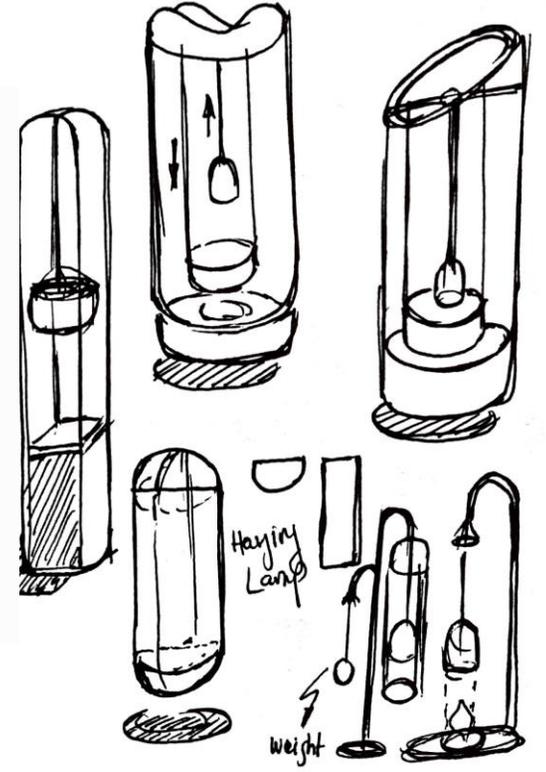
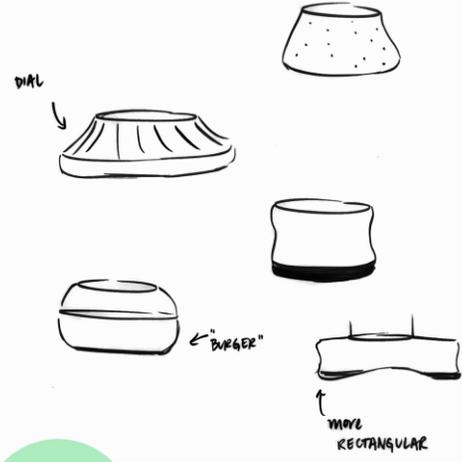


12:30 PM I Sleep

HANDLES



BASES



We back into an ideation phase after choosing concept 2 as our final direction. We stated to look how to bring in elements we learned from doing our routine study and things that seemed to work.

Ideation

Analog vs. Digital Lighting

Here we being to show what are the pros and cons of each type of lighting. We decided to go with analog since it had many beneficial psychological elements.

Digital

- Pros
 - Full Control of color
 - Safety
- Cons
 - Artificial light

Fire (Analog)

- Pros
 - Variety of fuels
 - Warm Tones and feel
- Cons
 - Fire Hazard
 - Heats up room

Oil vs Candles

Afterwards we also had a debate on what kind of natural lighting since concepts went with candles or oil lit. We went with oil lit because of the control of strength is useful for those with different light sensitivity.

Candles

- Pros
 - Simple
 - Nice smells
- Cons
 - Not much control
 - Does not always burn efficiently

Oil Lit

- Pros
 - Burns cleaner
 - Strength Control
- Cons
 - Fire Hazard
 - Smell

Phase 2.1

Here we again go back to the use case but rather than looking at ourselves we develop a persona to get a clue on what they may like and get more specific and make concepts off of it.

Persona

Name: Ivy Richardson

Age: 27

Work: Student & Content Creator

Family: Single

Location: Lives in the Bay Area

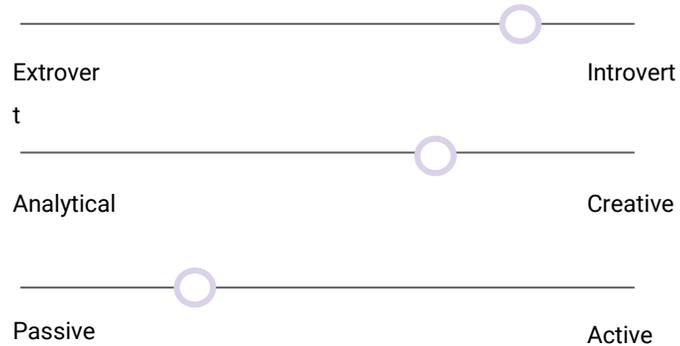
Motivations: Environmental Awareness

Goals: get 1M Subs & Follows

Frustrations: Sleep Problems, Stress from work

Bio: Ivy is an aspiring YouTuber who is focused on environmental related topics. Inspired By Levi Hildebrand, she spends her time researching everyday problems and creates videos. Because she is working on her own, she has been under a lot of stress from late nights finishing work which lead to her ongoing sleep problems.

Personality



Brands



allbirds



Routine



9:00 PM Homework



9:30 PM Homework



10:00 PM Hop on Youtube

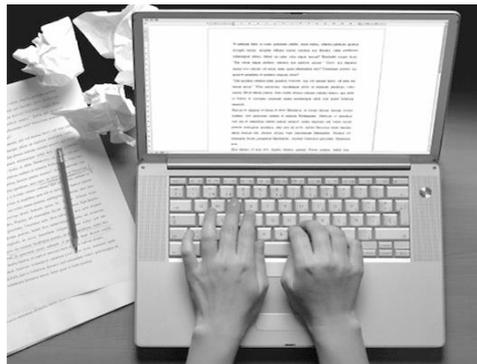


10:30 PM Start Plan for video



11:00 PM Research for video

Eye Strain



11:30 PM Research for video



12:00 AM Get ready for bed

Artificial light exposure

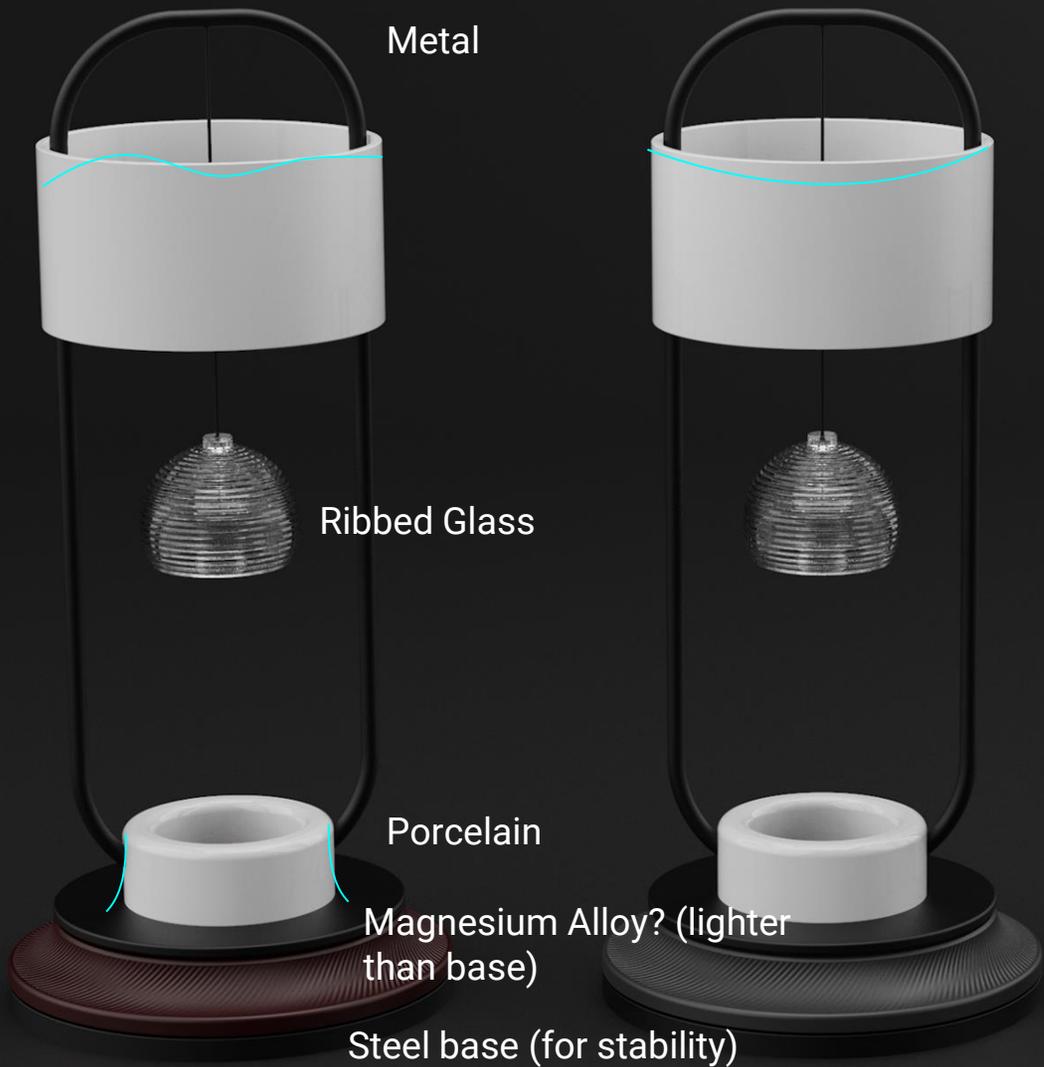


1:00 AM Sleep

Melatonin level is later in the night

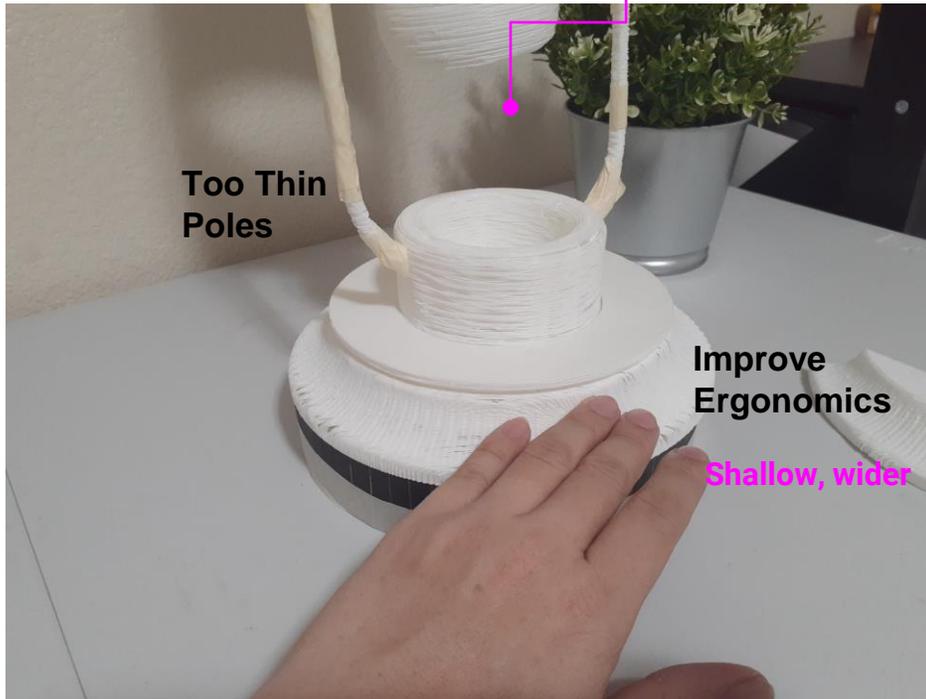
CAD

At this point we were starting to have a hard time finding a form that worked. It seemed like each design element was on its own rather than together as a whole.



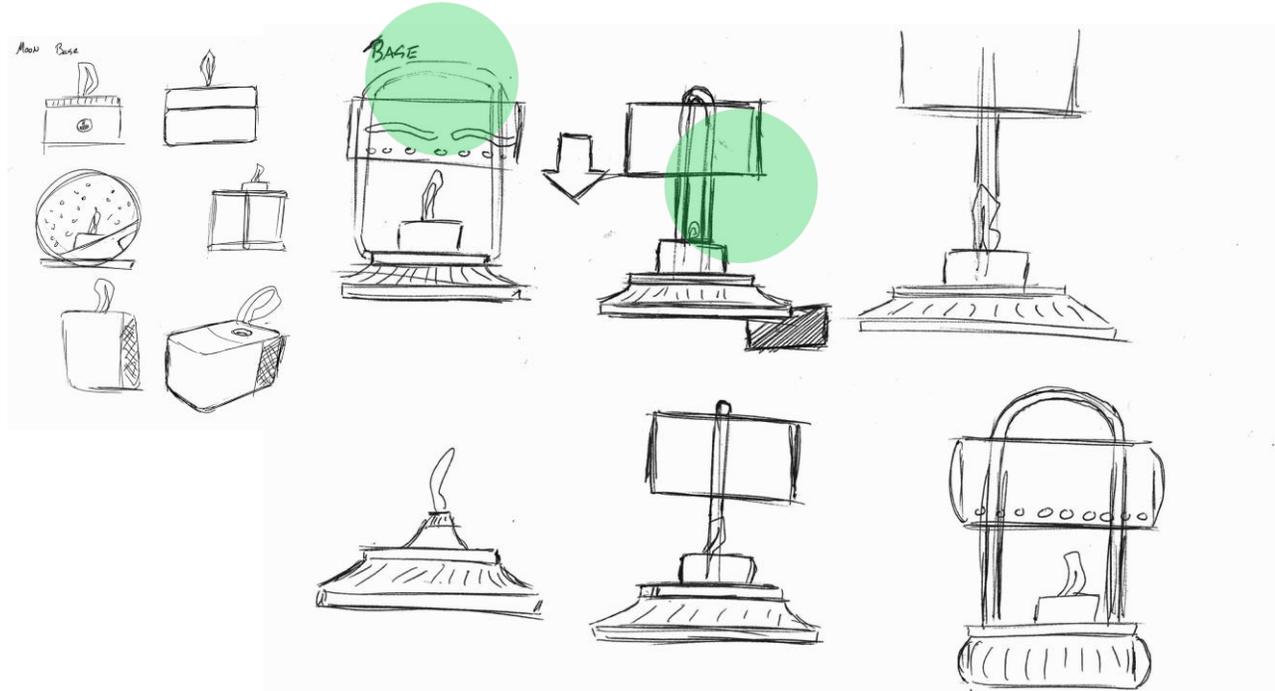
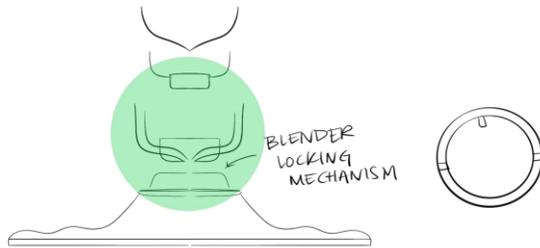
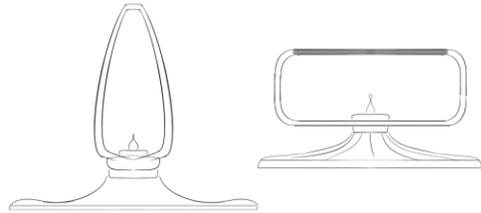
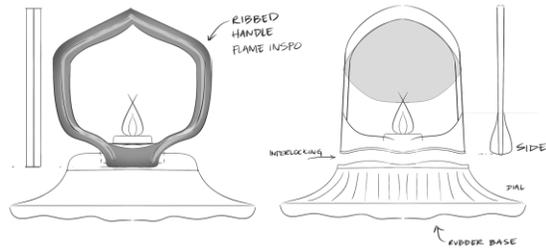
Mockups

Subtle transition between candle and extinguisher

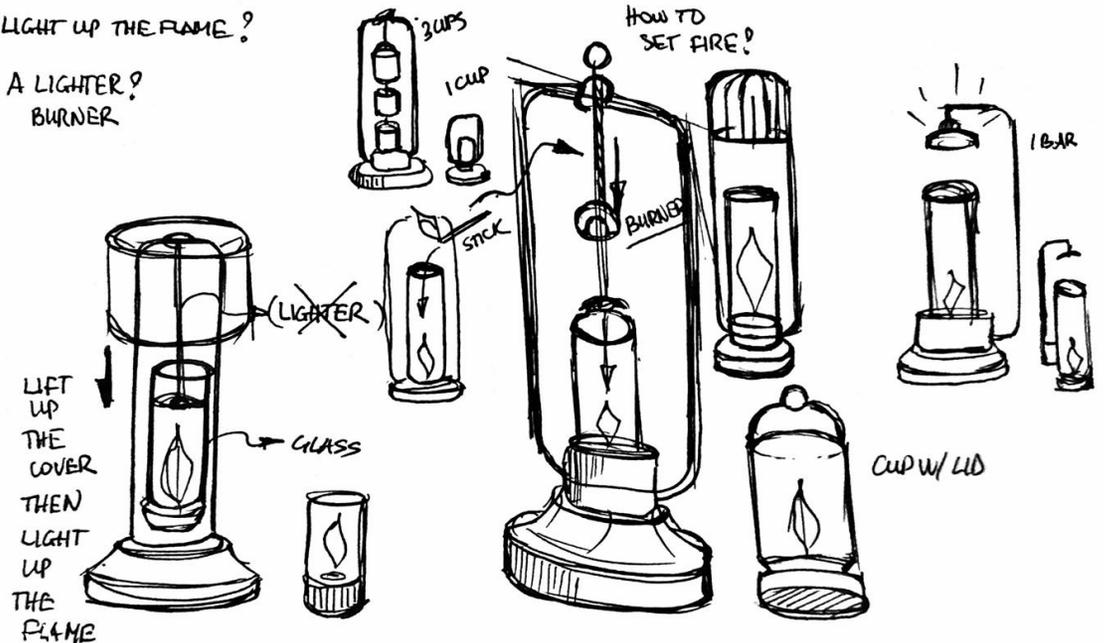


Be get out of our dilemma we decided to create a model and see what needed to be changed in terms of interface, scale, and aesthetics

Quick Ideation



- PROTECT THE FLAME?
- LIGHT UP THE FLAME?
- A LIGHTER? BURNER

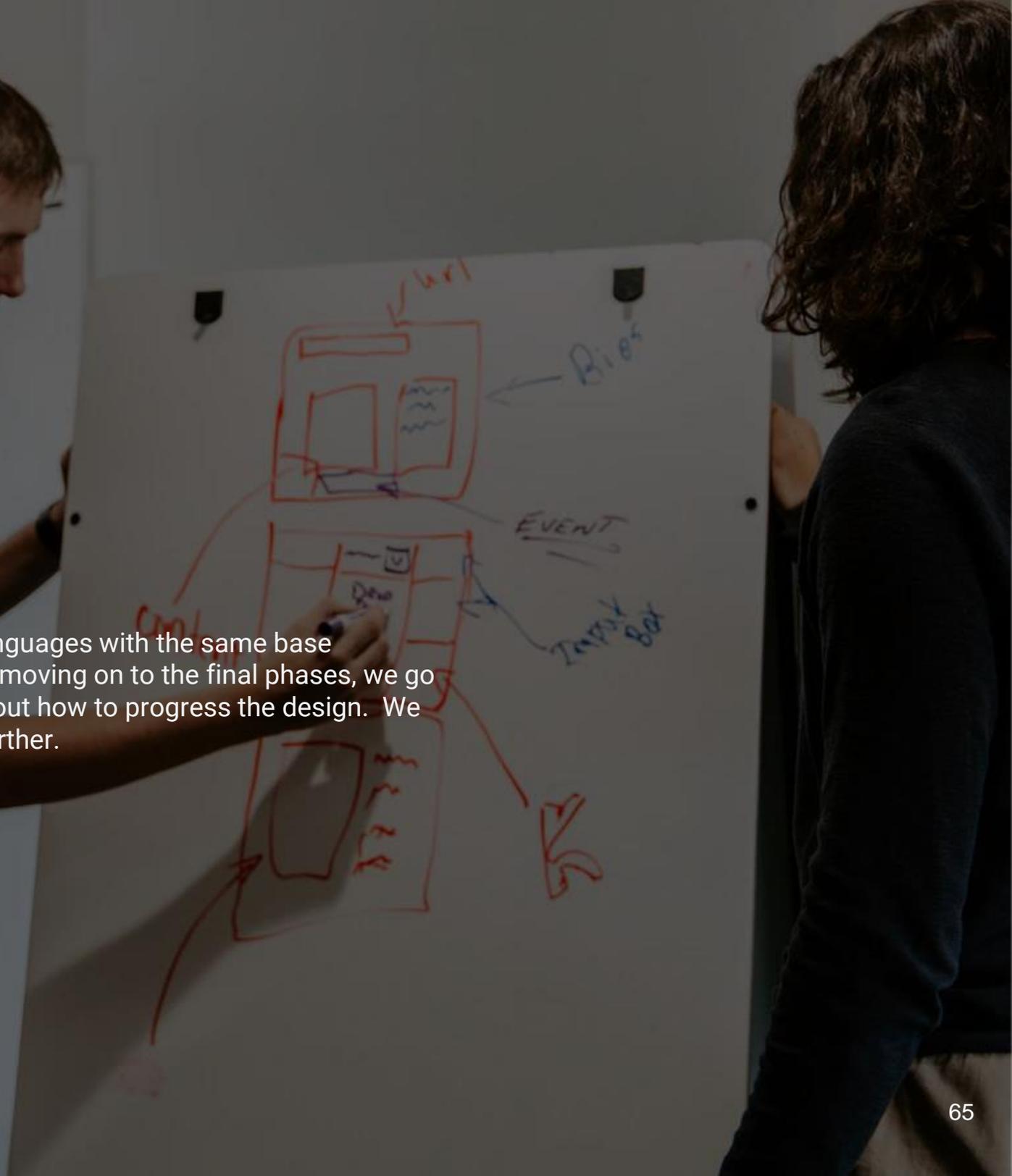


We went ahead to move forward needed to be fixed. We found that the dial was not large enough for regular hands and also we found the canopy as an opportunity to detail.

Ideation

Phase 3.1

We arrive at 2 main design languages with the same base concept. Being a bit stuck on moving on to the final phases, we go back to our mentor to talk about how to progress the design. We went on one and develop it further.



Final Design Direction 1

In this first design we widened the dial out, the dial's job is to control the wick height and the rate at which the canopy drops. The canopy was inspired by the lanterns from festivals and their glow.



Final Design Direction 2

For this design we took inspiration from old western ceramics and made it more vase like and moved the dial up to be more uniform with the base.





We decided to go with **concept 2** since it was far more simple and the dial on the first concept drew too much attention. We were not yet satisfied with the cmf since it was too classic for our target audience.

Ideation

Tips from Fitbit Mentor

We went back and talked to our mentor about our **next steps** and discussed about how to go about doing details and how to think about it



Form & CMF Inspiration

Vase forms / Collage



Glass treatments



Details



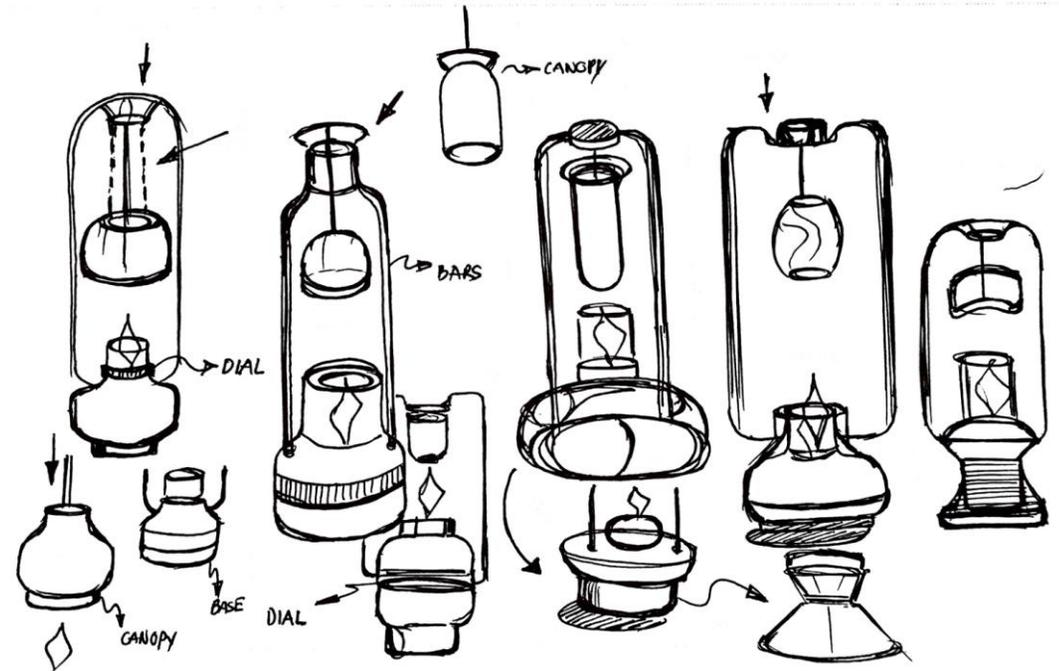
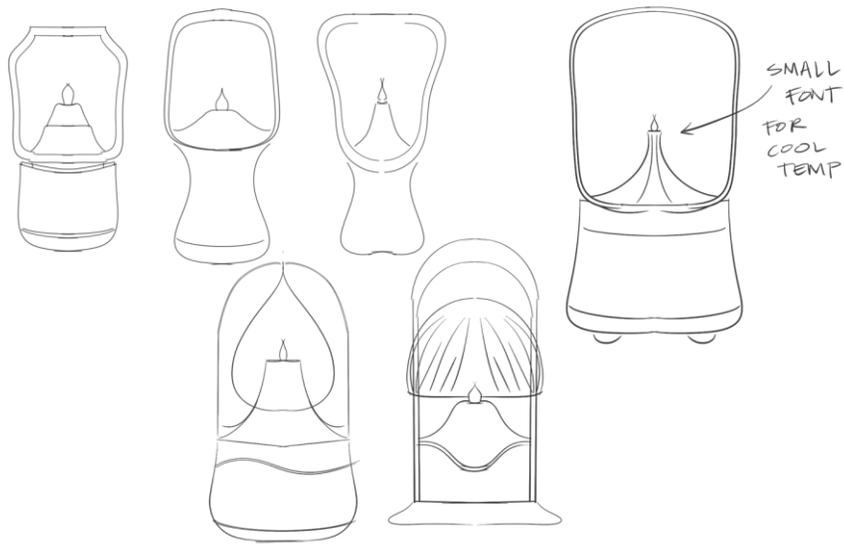
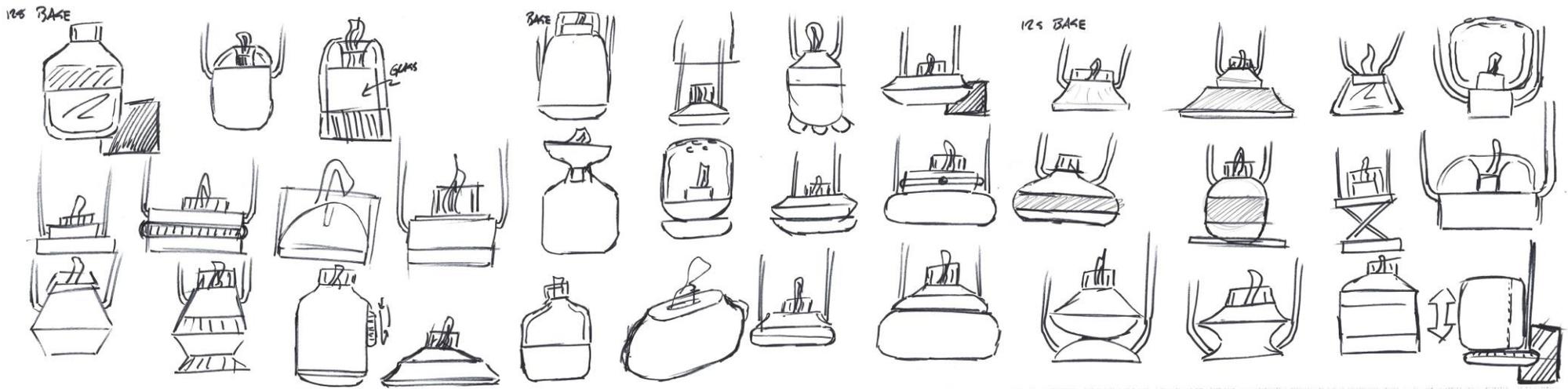
Sections / Stance





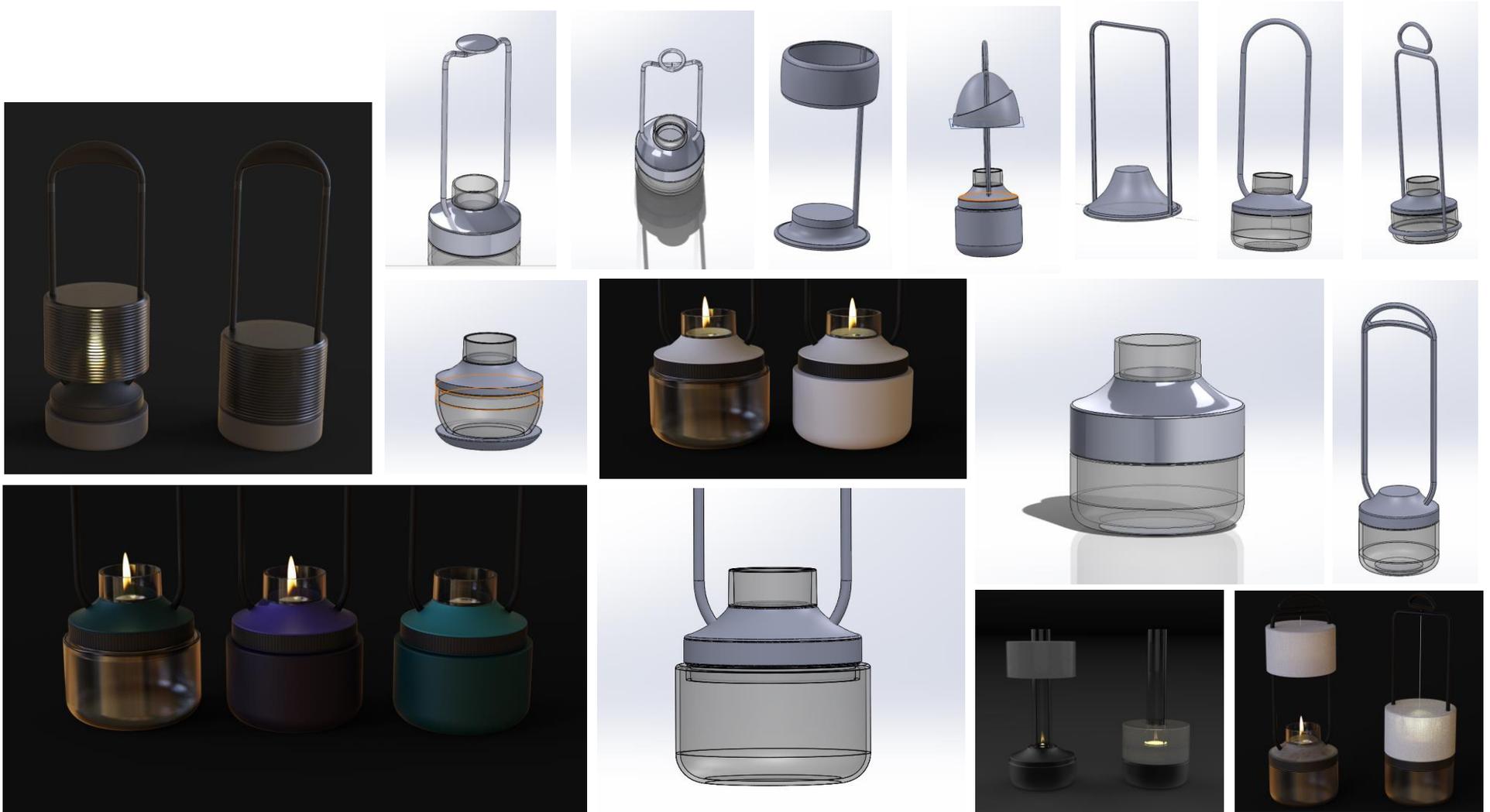
Final Phase

We go all in and exhaust the details.



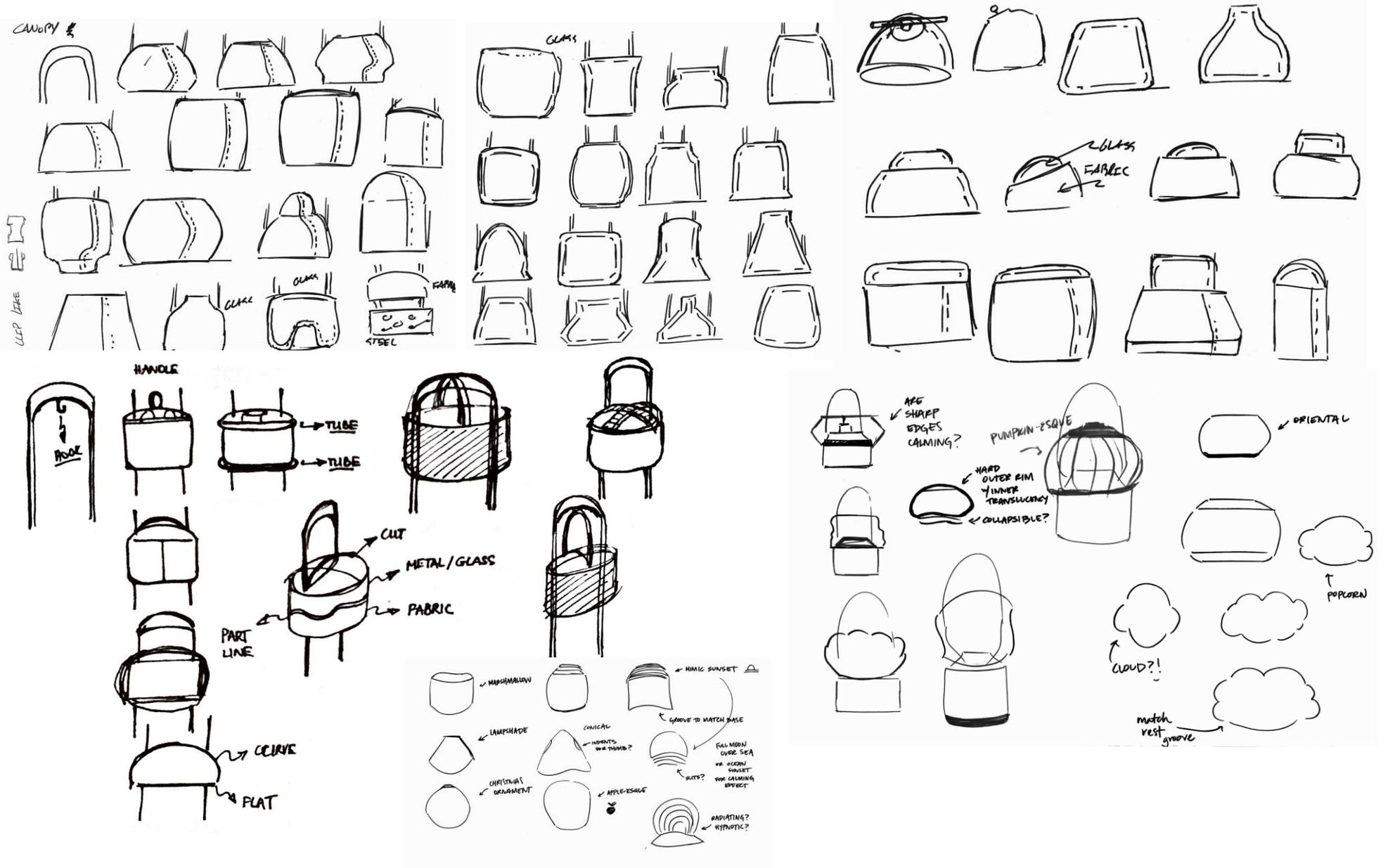
Before moving forward we had to nail how it is used, whether its a pull motion, twist, push, turn, or a flick. With that we had to detail out the bars since they hold up the canopy and allow it to be easily carried around. With that we also had to consider how a person raises the canopy to let it drop.

Detail Development



Here we begin to import some of the forms and designs into CAD to observe them then drop them into keyshot to experiment with CMF and have a realistic view of what it would look like.

CAD



After CAD we go back to ideating on the details trying to find a form.

Detail Development



Go into keyshot and draw over to discuss the details

More details

Final Design

A photograph of a two-lane asphalt road winding through a dense forest. The road is illuminated by a warm, golden light from the setting or rising sun, which is visible as a bright orange glow in the sky above the trees. The road has a dashed white center line and solid white edge lines. The trees are dark and silhouetted against the bright sky. The overall mood is serene and contemplative.

MLO

Mlo is a soothing bedside table oil lamp that helps people relax before going to bed. It does this by providing some natural light in the day time which allows melatonin production, sleep chemical, to continue. Over time the canopy drops to put out the flame to make sure you don't fall asleep with a live flame.



Features

Oil Dampers

Leather Strap

Frosted Glass Canopy

Steel Bars

Wavy Glass Chimney

Main Base

Dial changes wick height

Wood Base & Oil Font

Rubber bottom



In Context



How To Use



Set phone on night table before going to sleep



Lift the canopy up



Rotate dial to raise wick and light with lighter



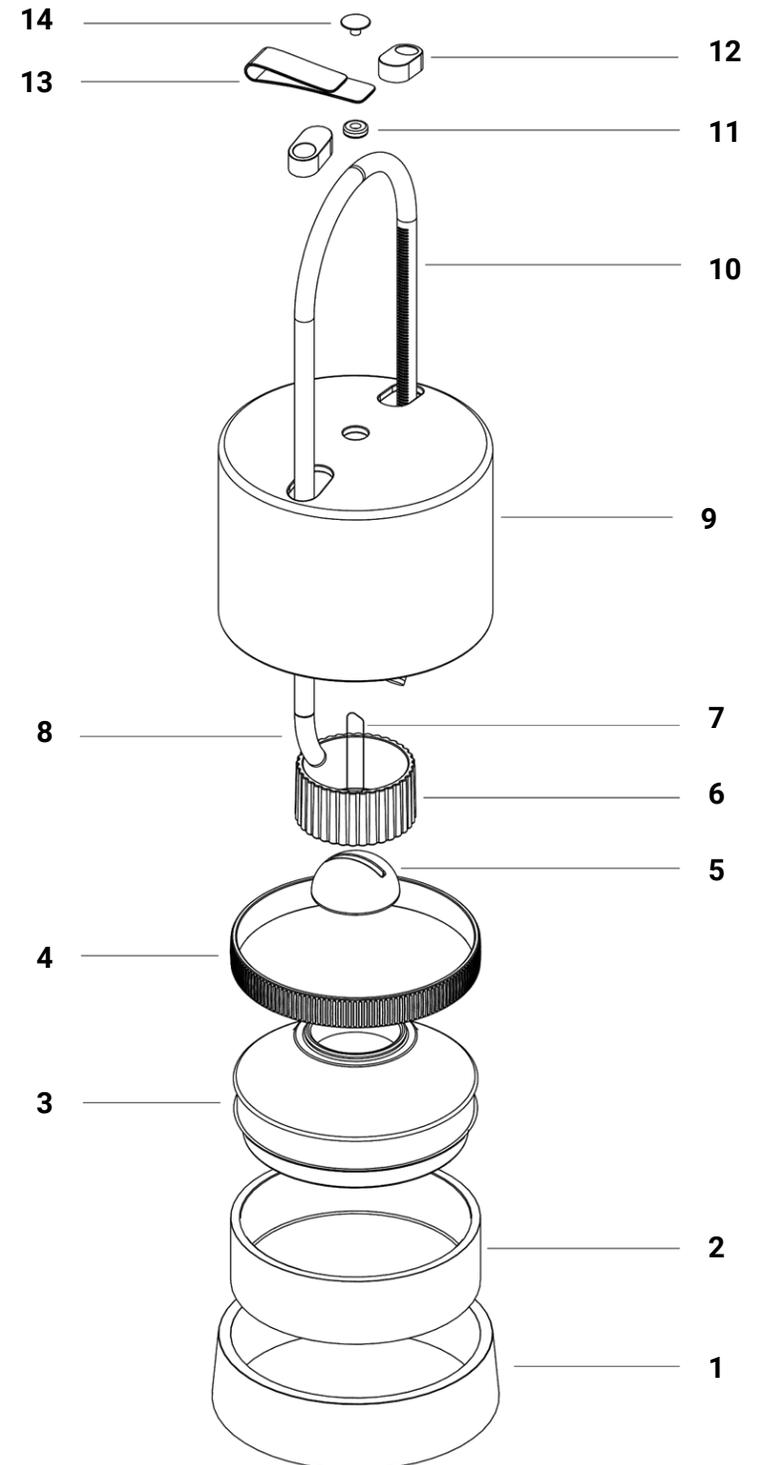
Rotate dial to adjust wick height



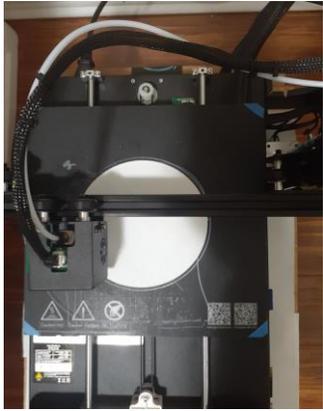


Build BOM

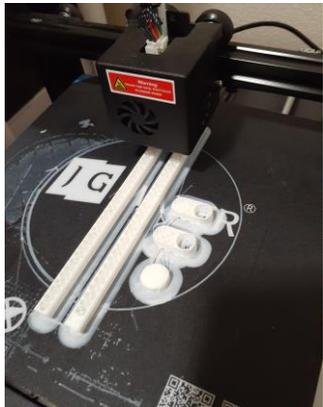
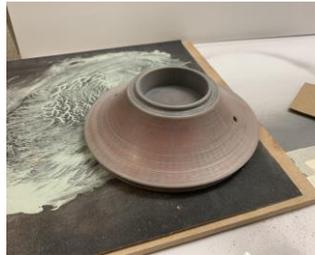
Item Number	Part	Material	Process	Units	Cost
1	Wood Base	PLA	3D Printed	1	\$20.0
2	Oil Bowl	PLA	3D Printed	1	\$12.00
3	Oil Bowl Cover	PLA	3D Printed	1	\$21.65
4	Dial	PLA	3D Printed	1	\$17.90
5	Wick Holder	PLA	3D Printed	1	\$2.80
6	Chimney	Resin	SLA Print	1	\$8.58
7	Wick (5/8")	Cotton	Buy it from Amazon	1	\$6.70
8	Bar Connector & Screws	PLA	3D Printed	2	\$0.40
9	Canopy	Resin	SLA Print	1	\$70.51
10	Bar	PLA	3D Printed	1	\$6.30
11	Handle Bolt	PLA	3D Printed	1	\$0.10
12	Oil Damper	PLA	3D Printed	2	\$0.32
13	Canopy handle	Leather		1	
14	Handle Nut	PLA	3D Printed	1	\$0.10



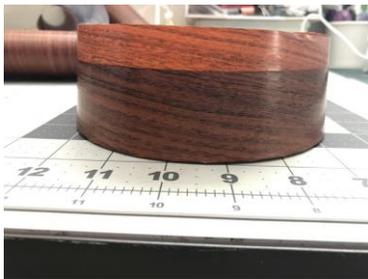
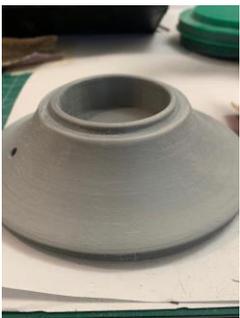
Building the Model



Filling & sanding



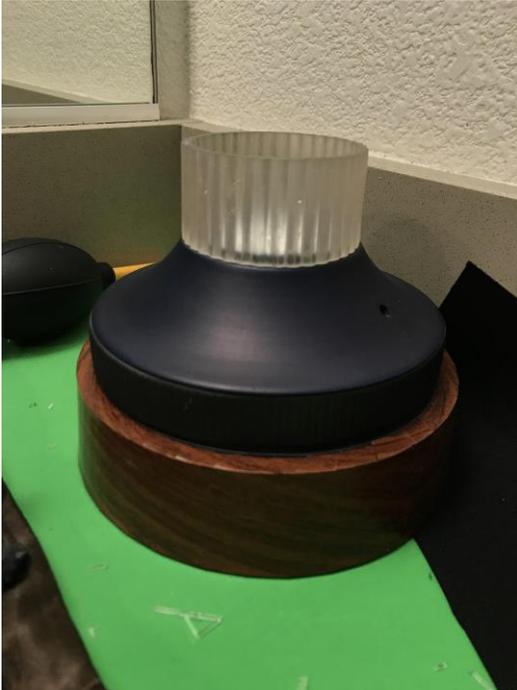
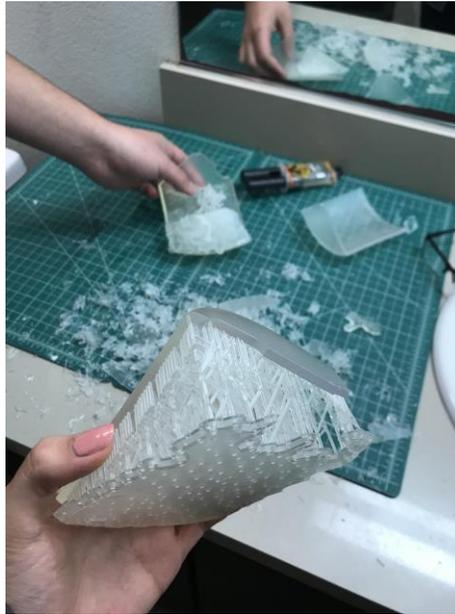
3D Printing



Priming & Painting



Building the Model



Welding with LED UV Liquid Kit



Thank You!