

# mokapot+

unlike any other moka pots.



Alvina Salim

# Introduction

According to the 2020 National Coffee Association (NCA) report, 64% of American adults currently consume coffee every day [1]. 79% of Americans prepare coffee at home, making it one of the most used appliances in everyday life [1]. Caffeine, in any form, was consumed by 92% of students in a study held in 2018, with coffee as the primary source of caffeine intake among the college students surveyed [2].

The goal of this project is to identify insights from **users**, **business** and **technology** and translate them into innovative solutions that improve the current coffee brewing/coffee consumption experience for **college students**.

[1] National coffee Association. NCA. (n.d.). Retrieved September 25, 2021, from <https://www.ncausa.org/Newsroom/NCA-releases-Atlas-of-American-Coffee>.

[2] Mahoney CR, Giles GE, Marriott BP, Judelson DA, Glickman EL, Geiselman PJ, Lieberman HR. Intake of caffeine from all sources and reasons for use by college students. Clin Nutr. 2019 Apr;38(2):668-675. doi: 10.1016/j.clnu.2018.04.004. Epub 2018 Apr 10. PMID: 29680166.



# Table of Contents

<b>A. Research</b>	2	<b>D. Delivering Innovation</b>	22
User Research		Computer-Aided Design (CAD)	
Types of college students coffee consumers		CAD rendering	
The 'Adventurous' user type		Mechanism	
Market Research		Dimension	
Product Benchmarking (electric)		In context rendering	
Market Analysis (electric)		Product Information	
Product Benchmarking (manual)		Bill of Materials; Colors, Materials, Finishes	
Market Analysis (manual)		Specification benchmarking	
Product Opportunity Gaps		User FLOW	
Insights from user, business and technology		To Brew Espresso	
Design criteria and problem statements		To Froth Milk	
		Final Landing Page	
<b>B. Ideation &amp; Iteration</b>	12		
Ideation & Iteration			
<b>C. Concept Development</b>	16		
Product Information			
Product Pitch			
Design Language			
Final Concept			
Sketches of final concept			

# 1.

## Research

The goal of this research phase is to plan and conduct comprehensive analysis of the information relating to users, business, and technology.

# Types of college students coffee consumers

Using findings from user surveys and interviews, I have identified 2 main reasons why college students consume coffee—it's for either energy or flavor. From the research, I have also discovered that the users' expertise in coffee could govern their willingness to spend on coffee makers. These spectrum (reason for coffee

consumption vs. coffee expertise), in contrast with each other, reveal 4 different character combinations and respective user categories for college student consumers: Active, Elite, Last-minute, Adventurous.



## Ashley Allen

**Age** 21

**Occupation** Full-time student

**Living space** Student housing

**Location** Minneapolis, MN

Tech-savvy

Fast-paced

Receptive

## 'Adventurous'

The user focus for this project is on the 'Adventurous' type, and the goal of this user persona page is to create reliable and realistic representations of this user type—in this case, Ashley Allen.

**About** — Ashley has a fast-paced lifestyle and likes to get things done quickly. She frequently consumes coffee and cares about the quality and flavor of her coffee. Ashley likes to explore different types of coffee flavors, but she doesn't have the expertise in different types of brewing techniques. While she wants to explore high-end coffee makers that have a lot of features and customizability aspect, price is one of her primary concerns when it comes to choosing the type of coffee maker she would purchase.

### Goals:

- Customize her coffee to try out different flavors.
- Make a good-tasting coffee quickly and easily.
- Find a space-saving coffee maker that fits in her apartment.
- Find a budget-friendly coffee maker.

### Frustrations:

- Most coffee makers with customizable settings are larger in size and takes a longer brew time.
- Lower cost coffee makers tend to not produce high quality coffee flavor and not have customizable settings.
- Existing low-cost brewers that allow for flavor customizability (usually manual brewers) requires expertise in coffee & involves a lot of process.

“Although price is one of my concerns, if [the coffee maker] produces good coffee flavor, I can try to reconsider the price and see if it balances out with what it offers.”

# Product Benchmarking

The goal of this product benchmarking tool is to compare the existing coffee makers used by college students across different comparable categories to understand opportunities within the market. For a fair approach, this product benchmarking process is divided into 2 parts—electric coffee makers and manual coffee makers.

1a. Types of **electric** coffee makers used among college students:



<b>Type</b>	Keurig K-Mini	CHULUX Single Serve	Nespresso Vertuo Next	Cuisinart DCC-3200	Mr.Coffee 5-cup
<b>Price</b>	\$75.00	\$40	\$160	\$100	\$18
<b>Brew method</b>	Pods (drip coffee)	Pods (drip coffee)	Pods (centrifusion brewing system)	Drip coffee	Drip coffee
<b>Settings customizability</b>	Not customizable	Not customizable	Each pods has its own fixed settings	Customizable	Not customizable
<b>Flavor/texture</b>	Clear, light-bodied, variety of flavors depending on pods used	Clear, light-bodied, variety of flavors depending on pods used	Medium-bodied, produces crema, variety of flavors depending on pods used	Clear, light-bodied	Clear, light-bodied
<b>Coffee knowledge</b>	Not required	Not required	Not required	Not required	Not required
<b>Ease of use</b>	Easy	Easy	Easy	Easy	Easy
<b>Time-efficiency (brew time)</b>	2 minutes	3 minutes	Espresso = 35-52 s. Black coffee = 90-105s	8 minutes	7-10 minutes
<b>Requirement of additional tool(s)</b>	No	No	No	Filter	Filter
<b>Coffee maker size (H x W x D) or (H x d)</b>	12.21" x 4.5" x 11.3"	9.06" x 4.3" x 7.4"	12.4" x 5.5" x 16.9"	14" x 7.8" x 9"	10.63" x 7.01" x 9.65"

# Market Analysis

Using findings from the product benchmarking method, there is a pattern observed for the existing electric coffee makers used by college students: the size of a coffee maker is comparably related to its settings customizability. This biaxial map illustrates the opportunity gap in the current market for an electric coffee maker that is both space saving and has customizable settings.

1b. Biaxial map for **electric** coffee maker used by college students:



# Product Benchmarking

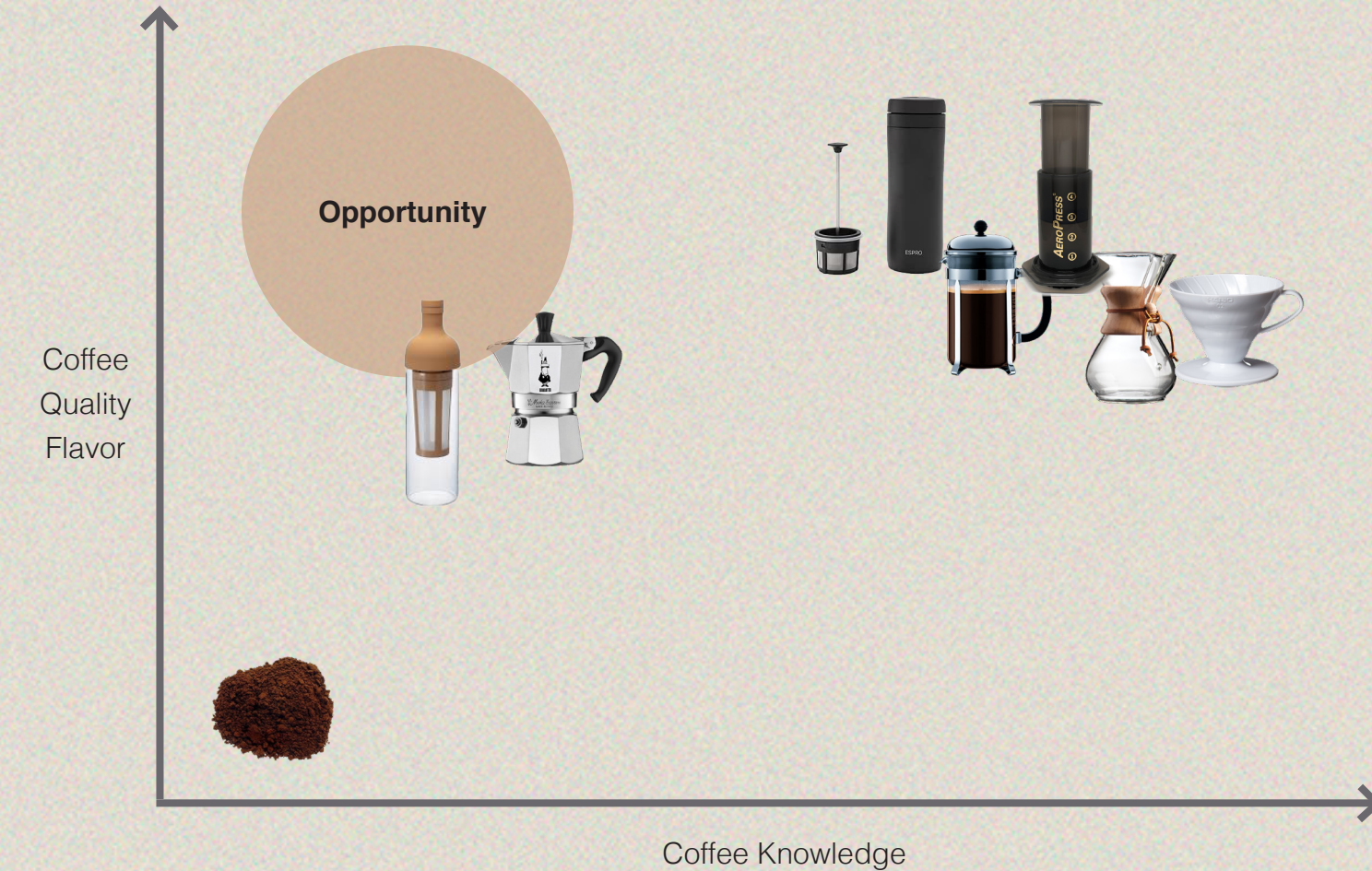
2a. Types of **manual** coffee makers used among college students:

								
<b>Type</b>	Chemex	Hario V60	Espro Travel Coffee Press	Bodum Chambord French Press	Aeropress	Bialetti 6-Cup Moka Pot	HARIO Cold Brew Bottle	Instant Coffee
<b>Price</b>	\$45	\$20	\$45	\$25	\$32	\$30	\$30	Relatively cheap
<b>Brew method</b>	Pour-over	Pour-over	Plunger/press	Plunger/press	Plunger/press	Percolator	Cold brew	Directly mix with hot water
<b>Settings customizability</b>	Customizable (coffee brewing techniques)	Customizable (coffee brewing techniques)	Customizable (coffee brewing techniques)	Customizable (coffee brewing techniques)	Customizable (coffee brewing techniques)	Customizable (coffee brewing techniques)	Customizable (brew temperature: rtp or cold)	Customizable (brew temperature)
<b>Flavor/texture</b>	Clear, flavor/texture varies on techniques used	Clear, flavor/texture varies on techniques used	Full-bodied, strong flavor	Full-bodied, strong flavor	Depends on the type of the filter used	Full-bodied, strong flavor	Full-bodied, more acidic	Weak taste
<b>Coffee knowledge</b>	Required	Required	Required	Required	Required	Not required	Not required	Not required
<b>Ease of use</b>	Difficult	Difficult	Easy	Easy	Moderate	Difficult	Easy	Easy
<b>Time-efficiency (brew time)</b>	4-5 minutes	2:30 mins	4 minutes	4 minutes	2-minutes	8 minutes	8 hours (fridge), 12-18 hours (rtp)	Instantly brewed
<b>Requirement of additional tool(s)</b>	Filter, water boiler	Filter, water boiler	Water boiler	Water boiler	Filter, water boiler	Stove/heater	Fridge/cooler (if cold brew)	Water boiler
<b>Coffee maker size (H x W x D) or (H x d)</b>	8.5" x 5.125"	3.876" (H) x 4.5"	7.9" x 2.75"	9.75" x 6.88" x 4.25"	4.6" x 3.6" x 3.6"	5.51" x 3.94" x 6.69"	11.81" x 3.43"	-

# Market Analysis

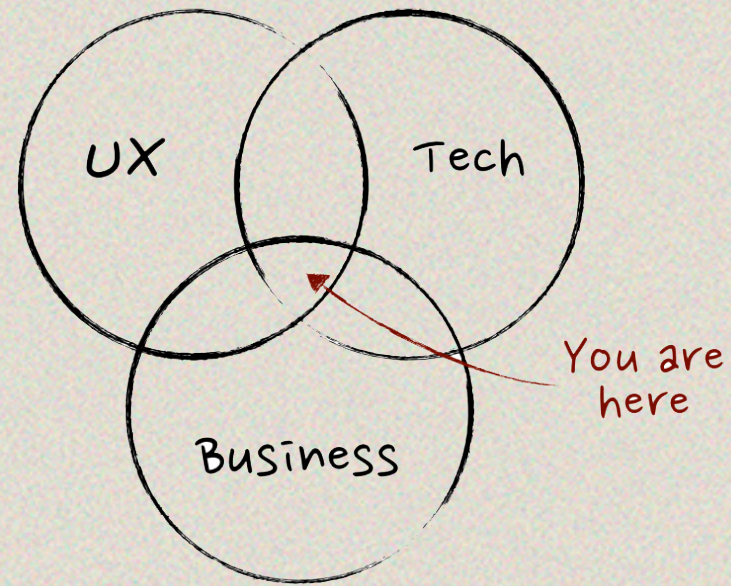
Using findings from the product benchmarking method, there is a pattern observed for the existing manual coffee makers used by college students: the coffee quality flavor the coffee maker produces is comparably related to the users' expertise requirement in coffee. This biaxial map illustrates the opportunity gap in the current market for a manual coffee maker that produces good coffee quality flavor that requires no users' expertise in coffee.

2b. Biaxial map for **manual** coffee maker used by college students:



# Insights

Based on the research and findings from the earlier methods, I summarize the actionable insights on the users, the business and the technology requirements for coffee makers used by college students.



## Users

- The 'Adventurous' user type cares about the **flavor** of a coffee and is willing to spend more on a coffee maker if convinced of a better coffee flavor.
- They like to experiment and explore coffee flavors by manually **customizing** the flavors.
- **Time-efficiency**, **space-saving** and **price** are also important factors in choosing a coffee maker.

## Business

- There is an opportunity gap in the current market for an electric coffee maker that is both **space-saving** and has **customizable settings**.
- For manual coffee makers, there is an opportunity gap to create coffee makers that produces **good coffee quality flavor** but **requires no expertise** in coffee.

## Technology

- The **brewing methods** used in current market are pour over, drip coffee, pods, plunger/press, cold brew, percolator, and instant coffee brew.
- The **centrifusion system** (centrifugal force + infusion) used in Nespresso Vertuo proves to provide a high quality coffee flavor and provide settings customizability
- Manual brewing systems tends to have a longer **brew time** than electric brewing systems

# Criteria

After synthesizing information from the users, business and technology, I have arrived with 5 design criteria that have the potential to fit the current market and improve the current coffee consumption experience—these include: coffee quality flavor, coffee maker size, coffee expertise, settings customizability, and price.

The three 'How Might We' statements represent the product opportunity gaps that combine these 5 design criteria into 3 possible design directions that will be used to guide the design direction in the next phase, the ideation phase.



# How might we?

design a **relatively inexpensive** coffee maker that has a **customizable flavor** but does not take up **space**?

design a coffee maker that can produce **good coffee quality** but requires **no expertise** in coffee making?

design coffee maker that provides **customizable flavor** but requires **no expertise** in coffee making?

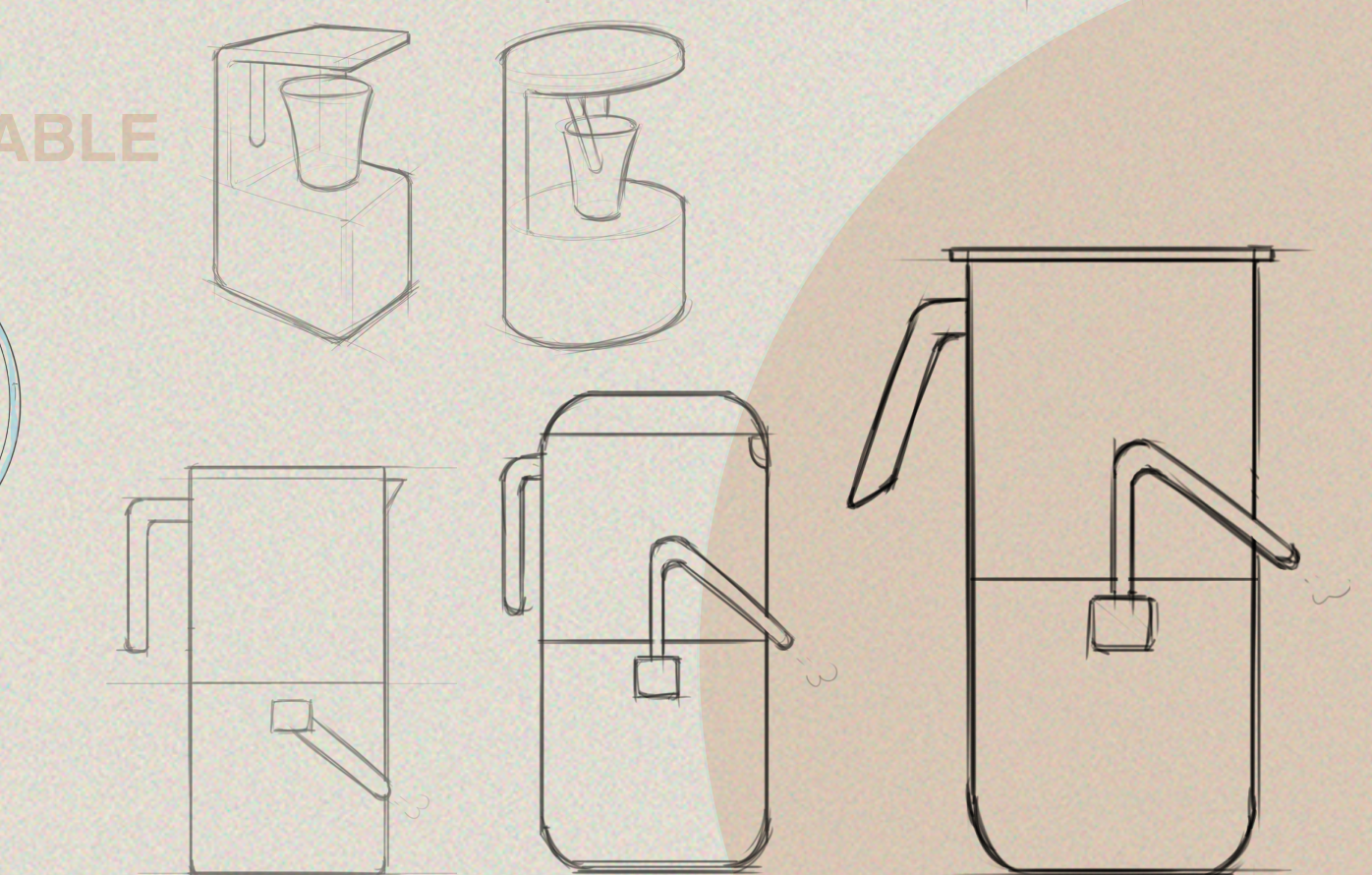
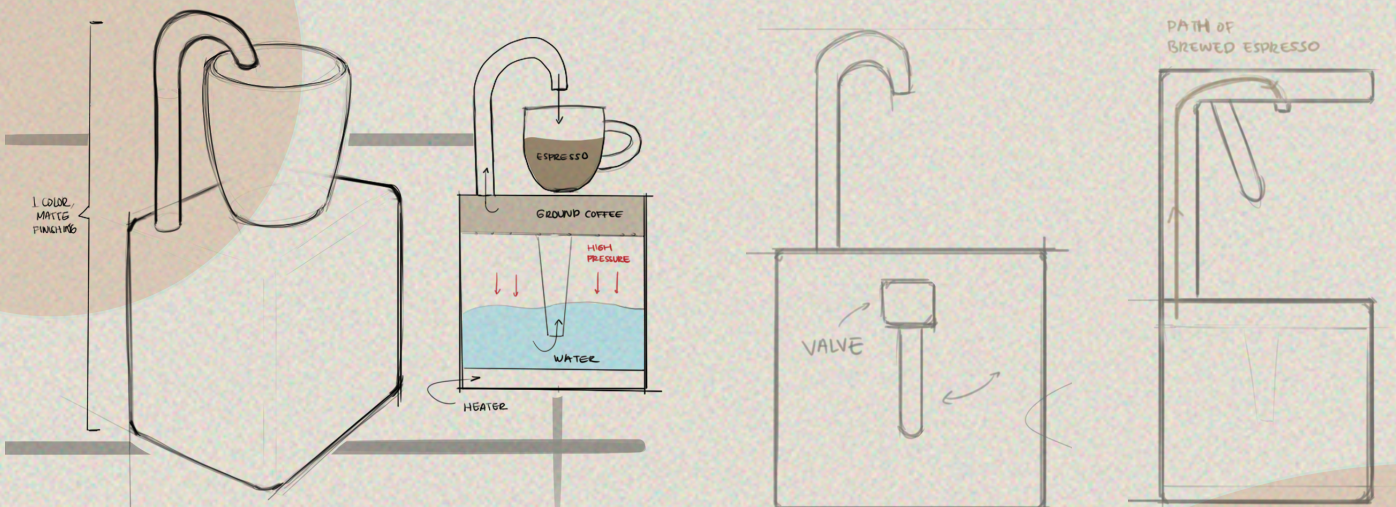
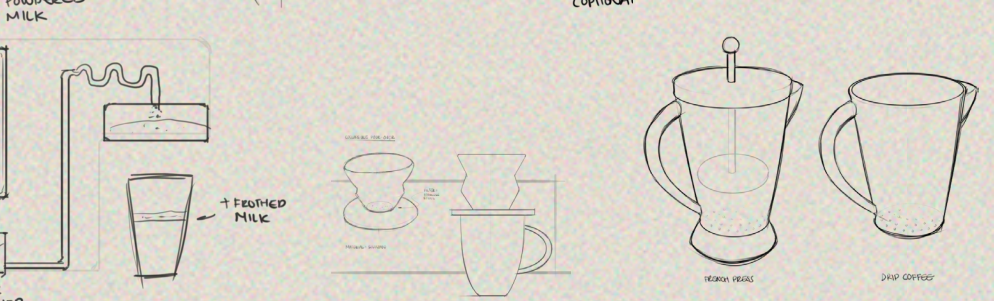
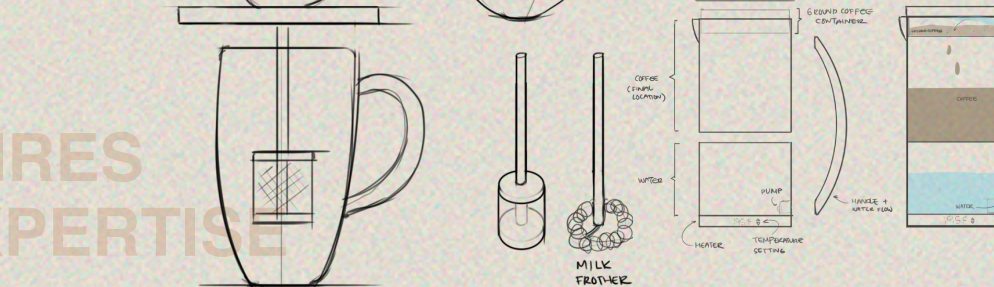
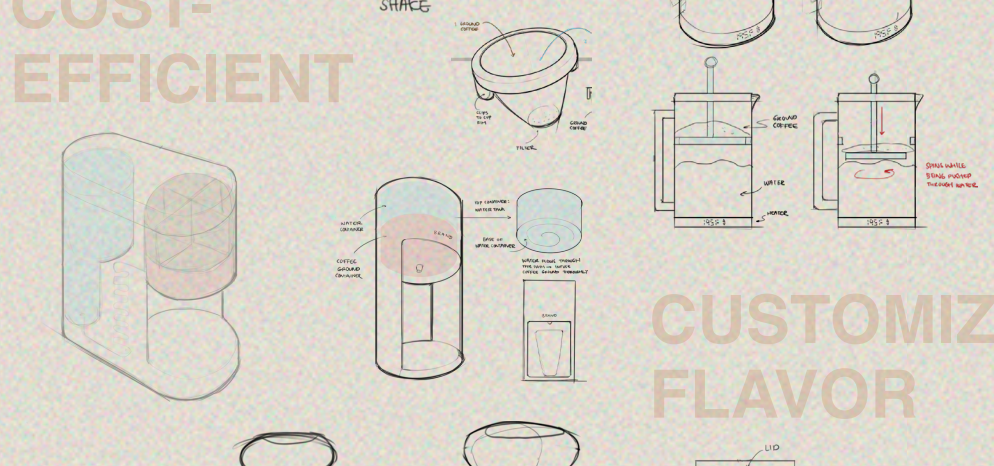
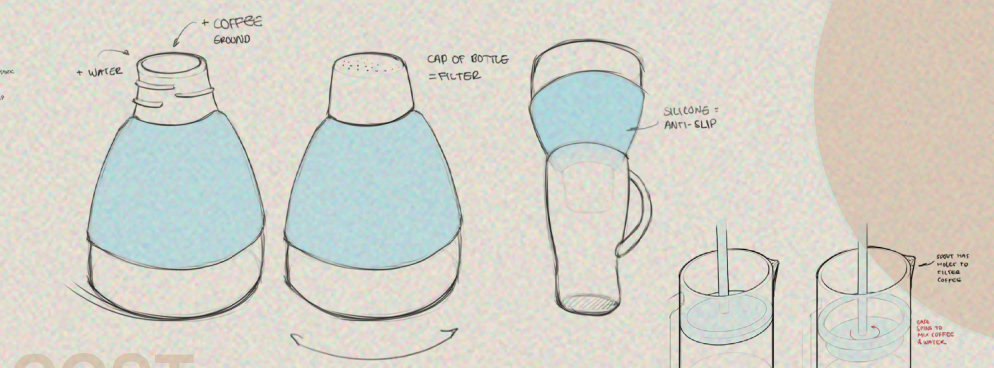
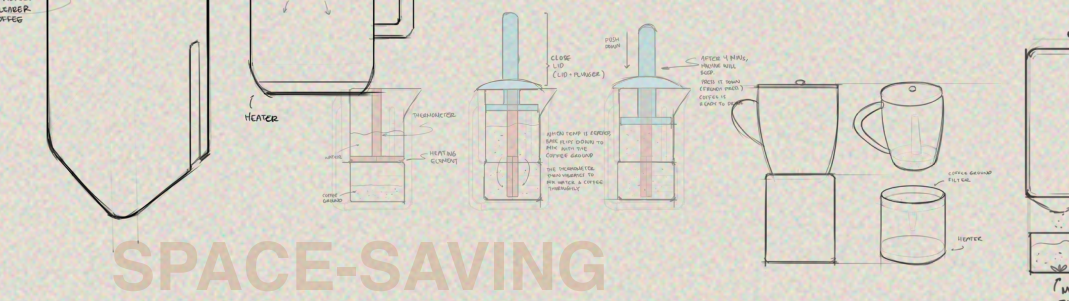
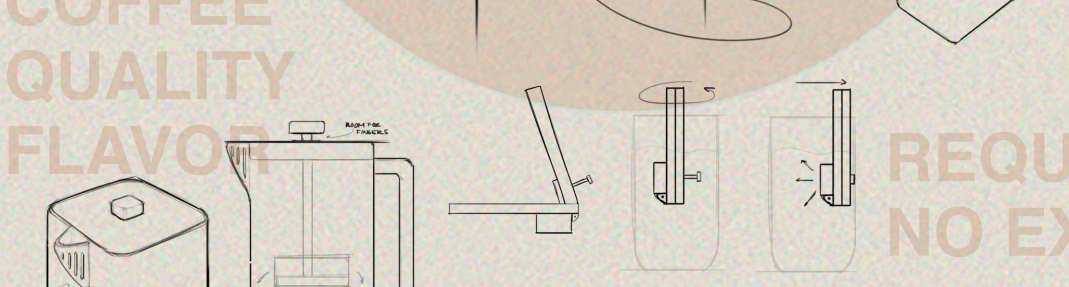
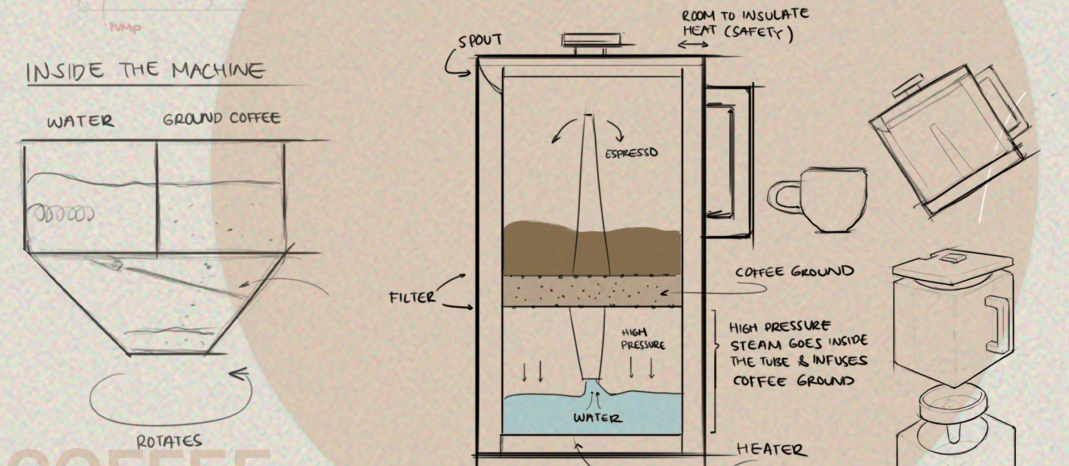
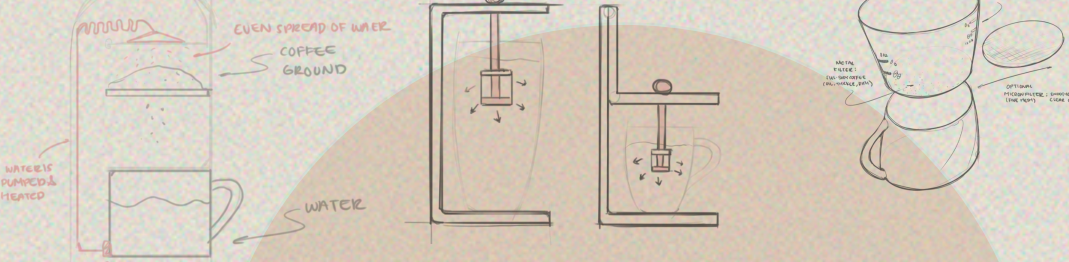
# 2.

## Ideation & Iteration

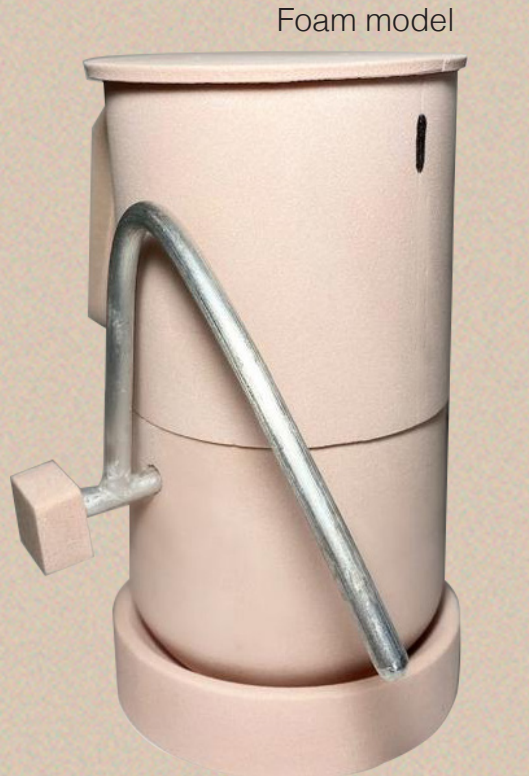
The goal of this ideation & iteration phase is to explore variety of design concept opportunities based on the design criteria and problem statements listed on the research phase. The early part of this phase focuses on generating divergent ideas, and the later part focus on form exploration through model making.



# Ideation.



# Iteration.



# 3.

## Concept development

The goal of this concept development phase is to select and refine one concept from the ideation & iteration phase. This includes critical decisions about product form, design language, specifications, color, material, finishes and product service pitch.

# Product Pitch

Mokapot+

**Problem** — Coffee makers with customizable flavor settings are expensive and are not space-saving.

## Pitch

The 'Adventurous' user group of college students continuously seek to experiment a wide variety of coffee flavors. However, available coffee makers in the market that offer flavor customizability are expensive and not space-saving, which go against two of the most important needs of the user group. Mokapot+ offers a solution to these problems by providing an espresso-maker that offers customizable flavors but is still cost-efficient and space-saving. The percolator brewing process used in Mokapot+ is cost-efficient, with the built-in heating feature as its only electric component. The bottom part of the Mokapot+ is for water input, and with enough pressure generated from the steam, the brewed espresso will come at the top part of the product. The same water container of the Mokapot+ used for brewing espresso can also be used as a milk frother, which will provide the users with a variety of coffee flavor options. Even with the dual function of the Mokapot+ — espresso-maker and milk frother, hence its flavor customizability, Mokapot+ has a space-saving design and is cost-efficient. The Mokapot+ allows the 'Adventurous' user group to explore different coffee flavors at the comfort of their home, without having to spend a lot of money.

**Features & Functions** — Space-saving design, milk frother for flavor customizability, cost-efficient, makes espresso with a great-tasting coffee quality flavor.

**Competitors** — Traditional moka pot, pod coffee maker, inexpensive electric coffee makers.

**Target User** — College students who care about the flavor of coffee and are seeking ways to experiment different coffee flavors.

**Stakeholders** — Consumers, manufacturers, engineers, distributors, influencers, distributors, retailers, designers.

**Rationale for development** — To provide a coffee maker with customizable flavor that is inexpensive and space-saving.

**Primary Function** — To produce great-tasting espresso.

**Secondary Function** — To froth milk and offer a wide variety of flavor options to the espresso.

**Key Technologies** — Double-walled for insulation: stainless steel on inner wall, and plastic on outer wall; Built-in water heater that will automatically stop when water is completely boiled; Milk frother wand; Coffee ground tank with tube that transfers brewed espresso from the bottom part to the top part of the Mokapot+.

**Approximate price** — \$15 for moka pot base features, \$20 for steam wand, \$10 for heating element.

# Design Language

## Form

Geometric, hard edge, smooth, clean.

## Details

Intuitive switch; Double-walled for insulation: stainless steel on inner wall, plastic on outer wall; Removable heating element; Raised & bent steam wand.

## Materials

Stainless steel, plastic, wood.

## Color

Primary color: black.  
Accent color: brown (wood), chrome (metallic).

## Texture

Matte finishing on outer wall; Smooth wood texture; Polished stainless steel.

## Personality

Contemporary, young-adult, simple, industrial, elegant.

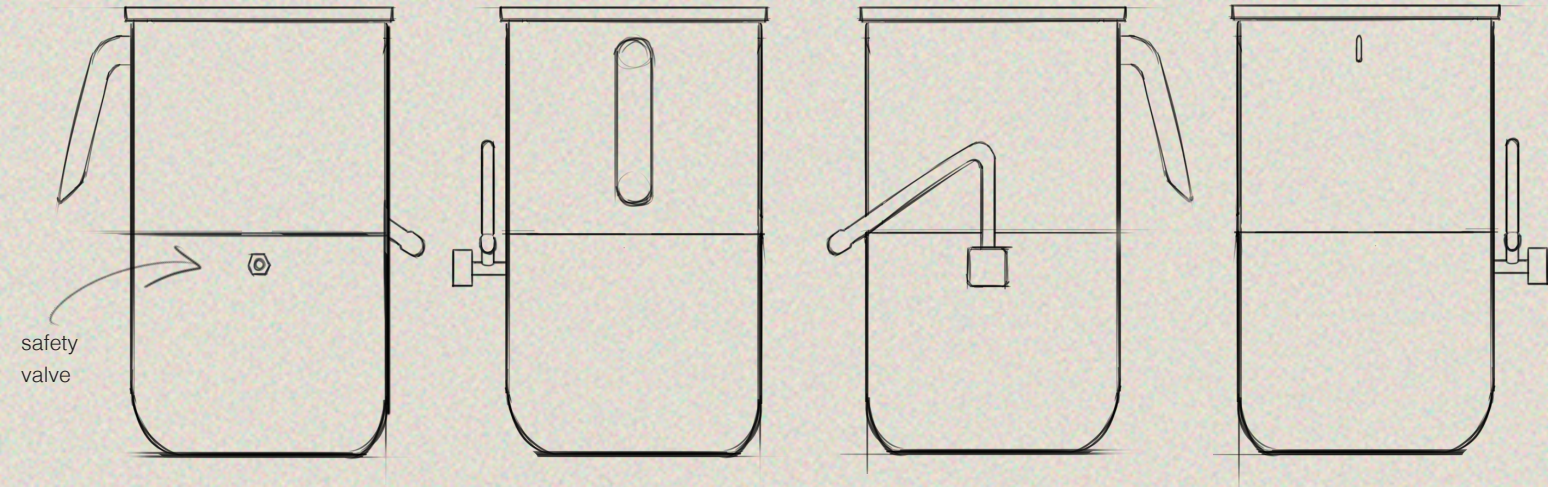


## CONTEMPORARY

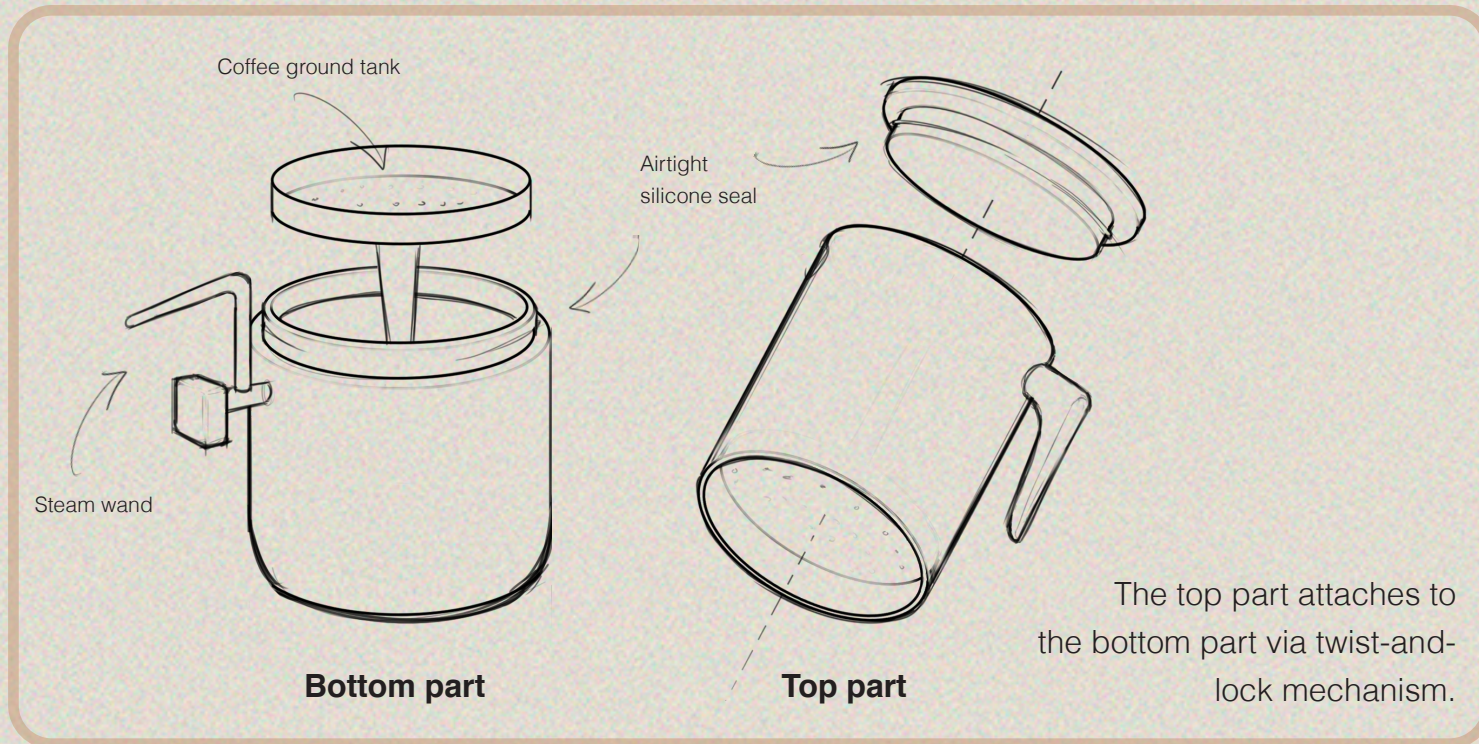


# Final Concept

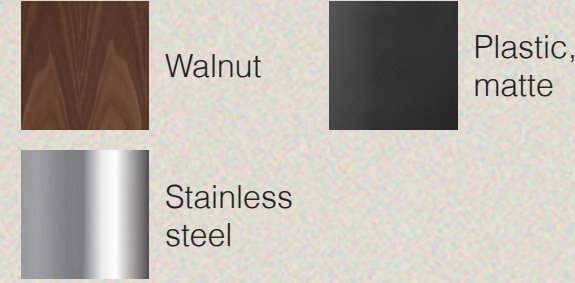
Mokapot+



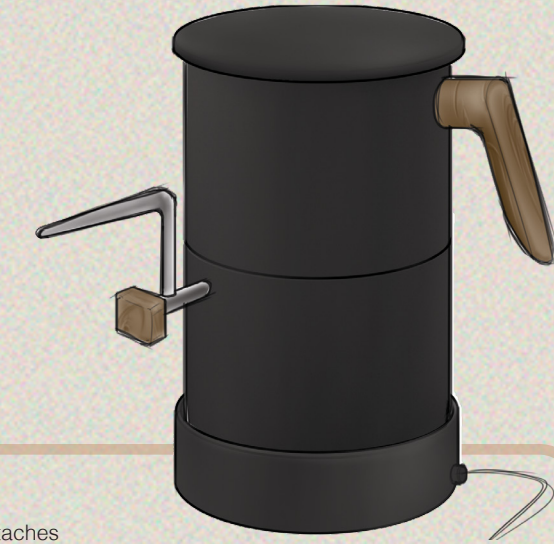
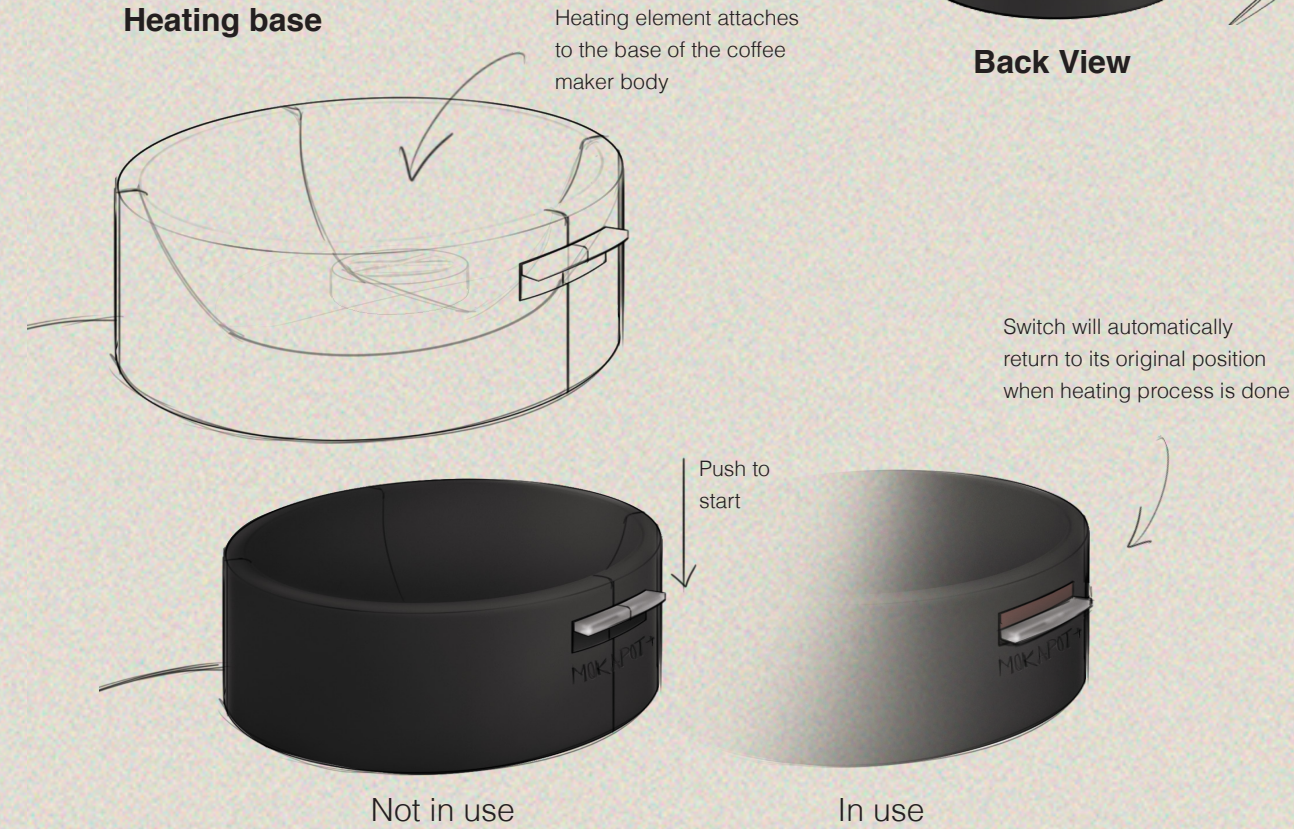
safety valve



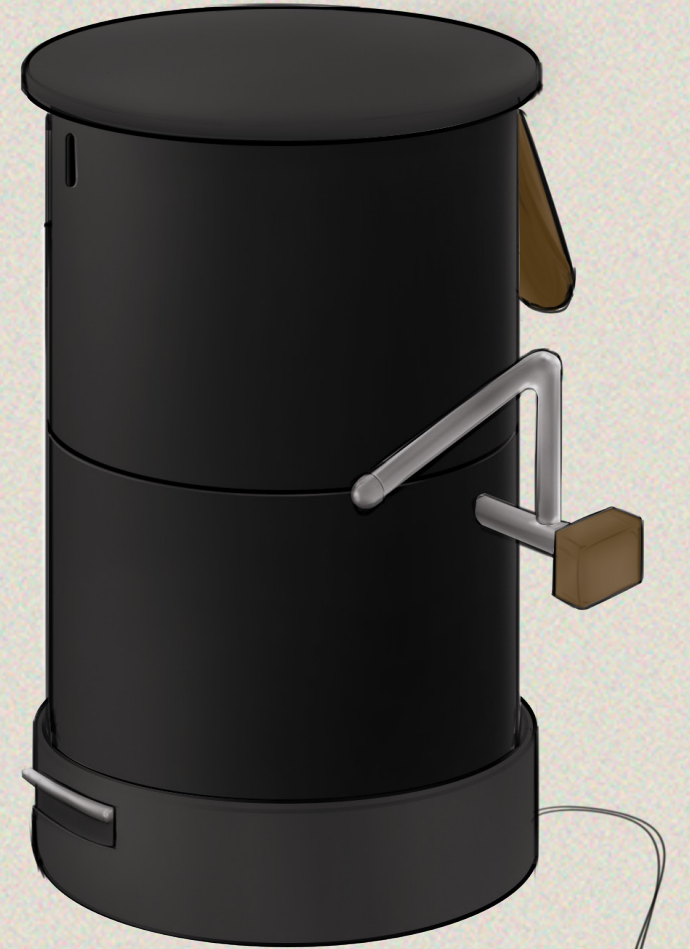
## Colors, Materials, Finishes



## Heating base



Back View



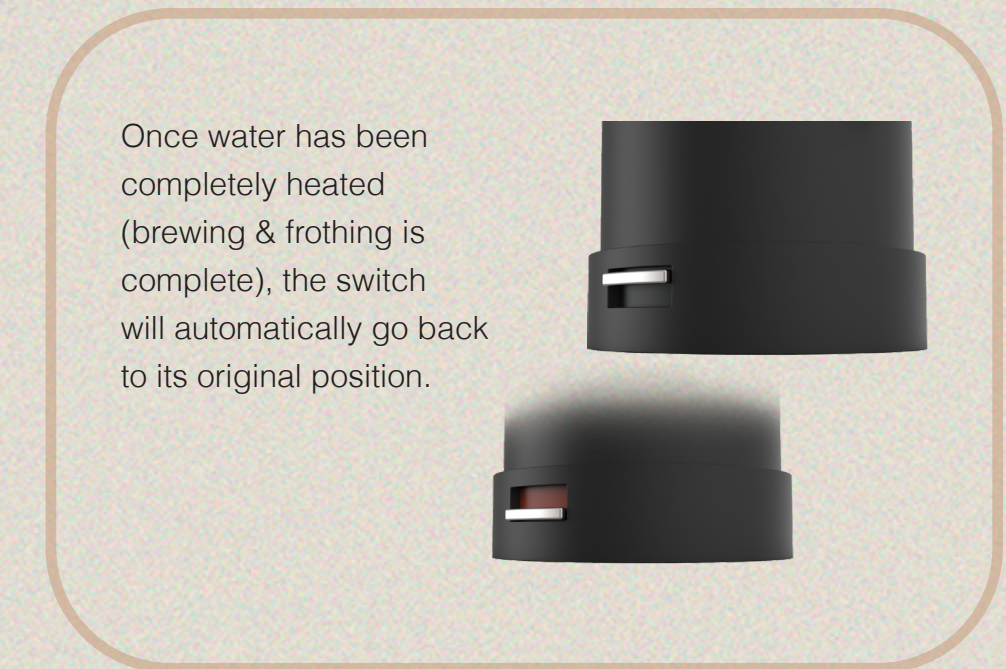
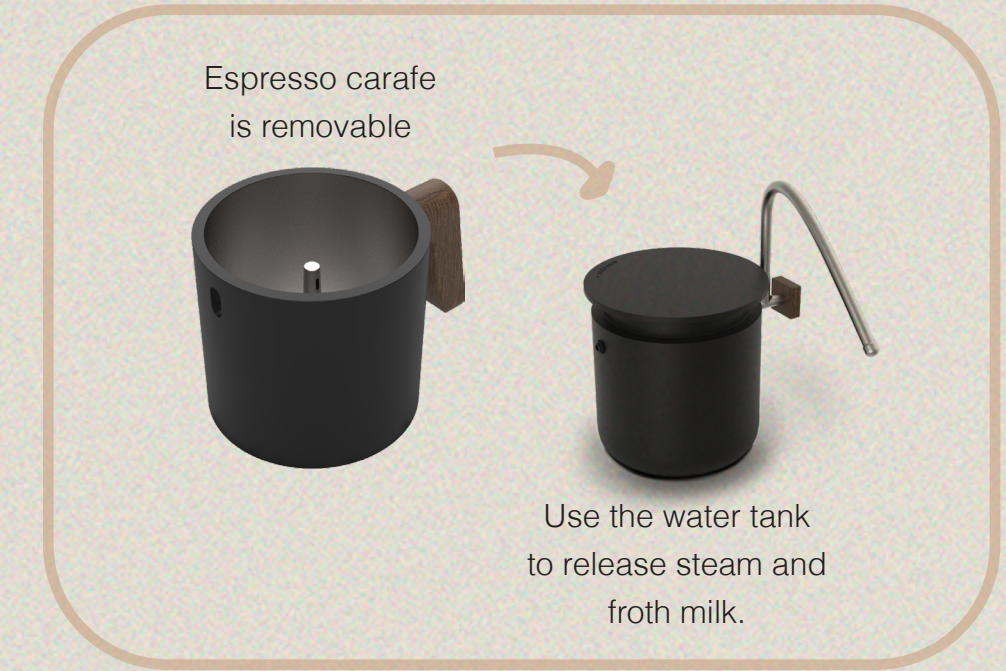
# 4.

## Delivering Innovation

The goal of this phase is to develop materials for communicating design language, product features, CMF (colors, materials, finishes), user interface and manufacturing specifications.

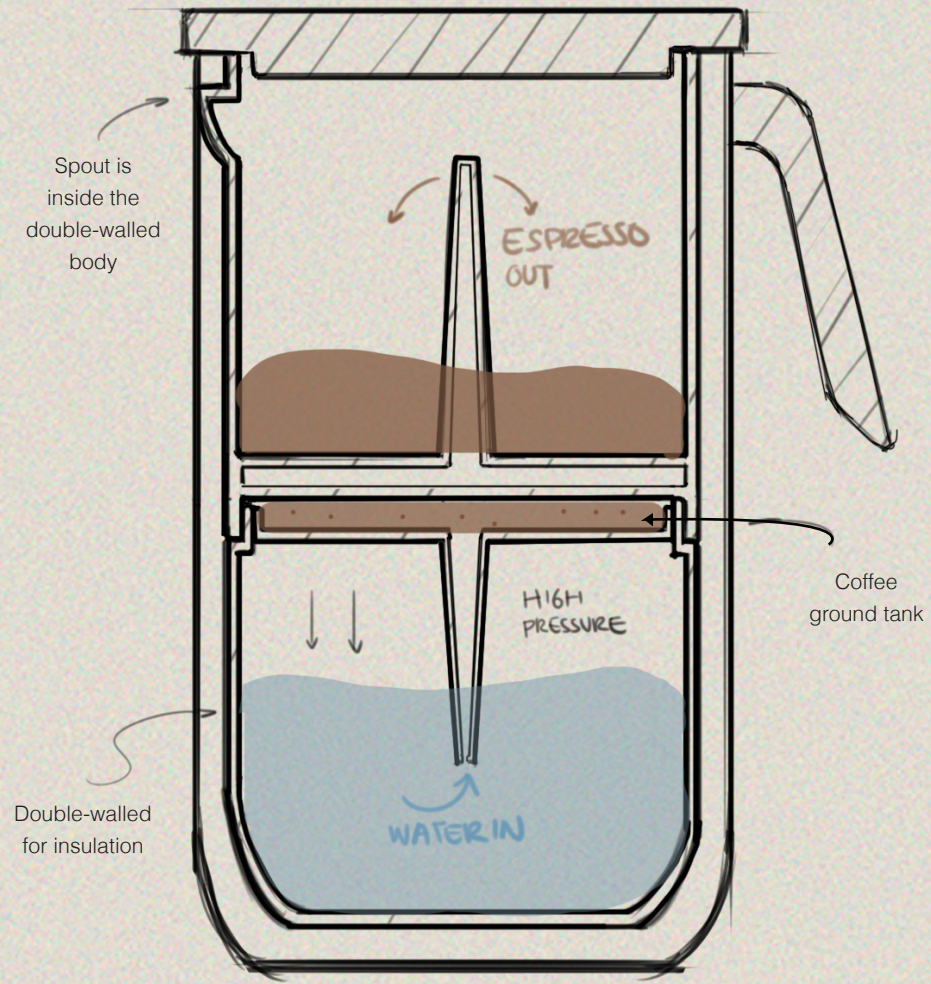
# mokapot +

unlike any other moka pots.



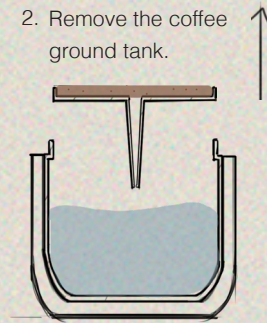
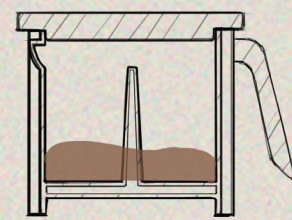
# Mechanism

High pressure generated by the steam forces an upward flow of water through the funnel which infuses the coffee ground.

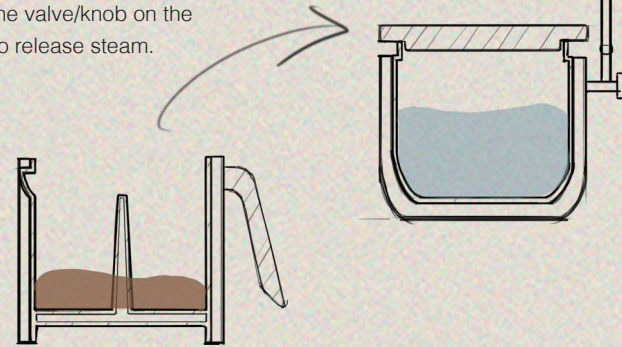


Side View

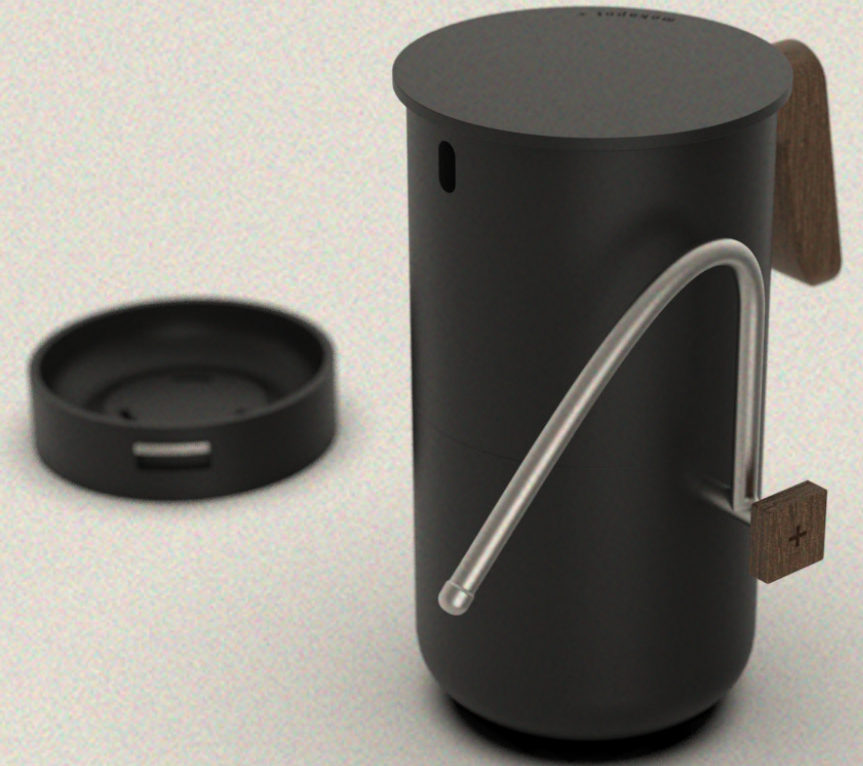
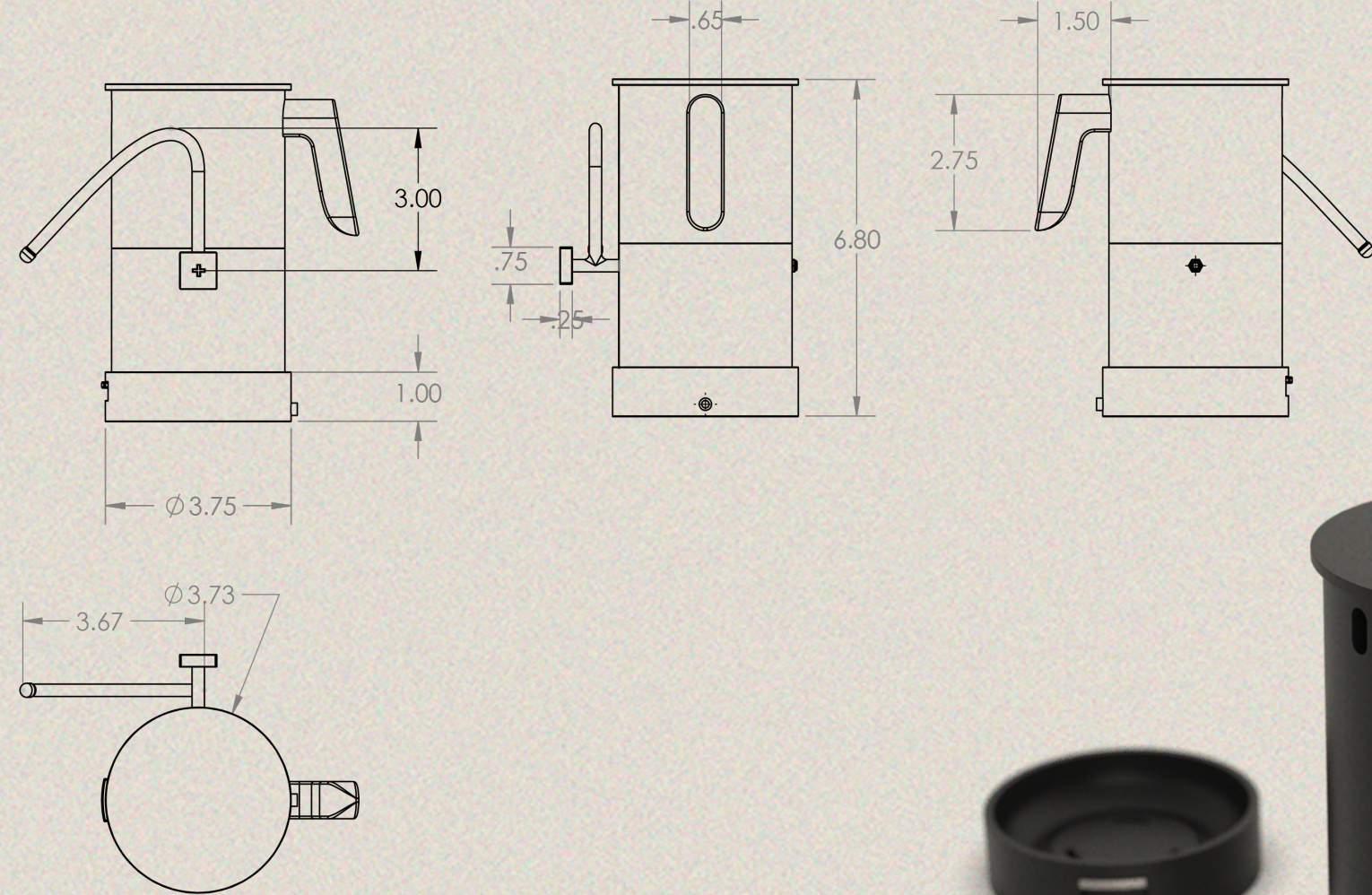
1. Detach the top part once brewing is done. This will be the carafe of your espresso.



3. To froth milk, cover the bottom part with the same lid used in the upper part. Use the valve/knob on the side to release steam.



# Dimension



# mokapot +

unlike any other moka pots.

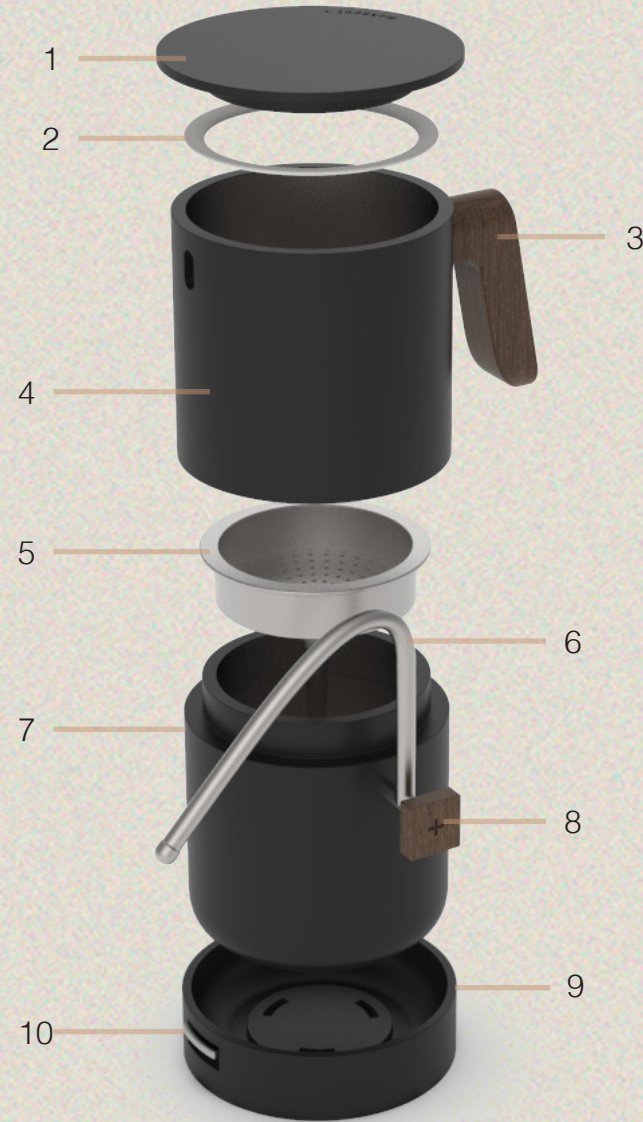




# BOM & CMF






Bill of materials; Colors, materials, finishes.

#	Name	Material	Color	Finishes
1	Lid	ABS plastic	Black PMS 6C	Matte
2	Airtight seal	Silicone	Grey PMS 441	-
3	Handle	Walnut wood	-	-
4	Espresso Carafe	Comolded: ABS and Stainless steel	ABS: Black PMS 6C	ABS: Matte Stainless steel: hairline
5	Coffee ground tank	Stainless steel	-	Hairline
6	Steam wand	Stainless steel	-	Hairline
7	Water tank	Comolded: ABS and Stainless steel	ABS: Black PMS 6C	ABS: Matte Stainless steel: hairline
8	Ball valve knob	Walnut wood	-	-
9	Base	ABS plastic	Black PMS 6C	Matte
10	Switch	ABS plastic	Cool grey PMS 5C	Glossy finish (stainless-steel)



# Specification Benchmarking

The goal is to study and compare list of features and specifications used in available products, to be applied for the Mokapot+. This includes understanding the sizes, specifications, and expected performance standards of the internal parts on the products.

	 <b>200W Dash Mini Rice Cooker</b>	 <b>Bellman Stovetop Steamer</b>	 <b>Bialetti Moka Pot</b>	 <b>Airtight Jar</b>	 <b>Nutribullet Blender</b>
<b>Features</b>	<ul style="list-style-type: none"> <li>- Electric heating element</li> <li>- Temperature sensor</li> </ul>	<ul style="list-style-type: none"> <li>- Steam wand</li> <li>- Knob (valve)</li> </ul>	<ul style="list-style-type: none"> <li>- Safety valve</li> <li>- Coffee ground tank</li> <li>- Filter plate</li> </ul>	<ul style="list-style-type: none"> <li>- Airtight gasket</li> </ul>	<ul style="list-style-type: none"> <li>- Twist &amp; Lock attachment</li> </ul>
<b>Specifications</b>	<ul style="list-style-type: none"> <li>- Magnetic operator (Fe2O4 of Curie temperature 90-105C or 80-105C, coercive force of 2.4-8.0 A/m)</li> <li>- Heating plate</li> <li>- Thermal fuse 150C</li> <li>- Micro switch 24V</li> <li>- Thermostat 250V 15 A</li> </ul>	<ul style="list-style-type: none"> <li>- Stainless steel wand</li> <li>- Pressure relief valve</li> </ul>	<ul style="list-style-type: none"> <li>- Ball valve</li> <li>- Stainless steel coffee funnel tank</li> <li>- Stainless steel filter plate</li> </ul>	<ul style="list-style-type: none"> <li>- Food-grade silicone</li> </ul>	<ul style="list-style-type: none"> <li>- Slots, indentations and protruded parts for the attachment of 2 parts</li> </ul>

# User Flow

## To brew the espresso:

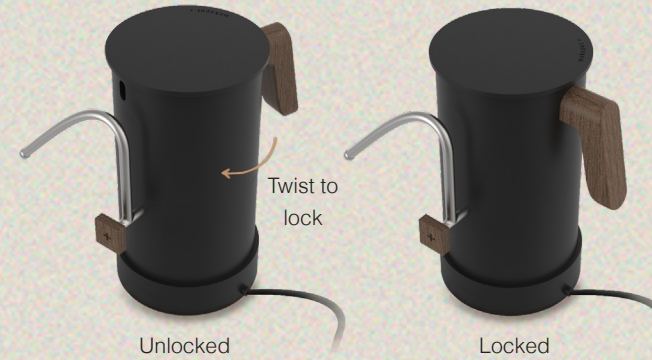
1. Fill water to the water tank up until below the safety valve as shown.



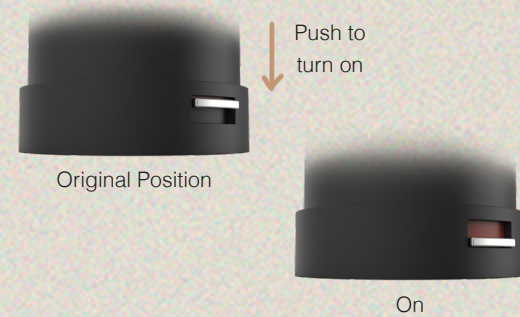
2. Put coffee ground in the coffee ground tank. Place this on top of the water tank.



3. Twist & lock the espresso carafe to the water tank for attachment.



4. Push down the switch to start brewing. It will automatically return to its original position when done.



5. Unlock and detach the espresso carafe & enjoy your 3-cup espresso!



# User Flow

## To froth milk:

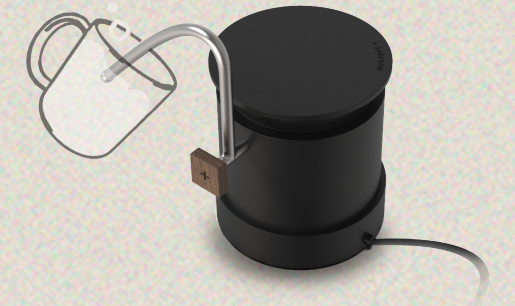
1. Fill water to the water tank up until below the safety valve as shown.



2. Place the lid on top of it & push the switch down to start steaming.



3. Turn the knob to release steam to froth your milk. When the water has all been used up, the switch will go back to its original position.



mokapot+



brews espresso.  
space-saving.  
cost-efficient.  
built-in milk frother.  
built-in water heater.

unlike any other moka pots.