KENWOOD

CookEasy +

FINAL REPORT

Feb, 2020 - Jun, 2020

Group C6

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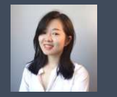
Peicheng Guo	5028191

MEET OUR TEAM

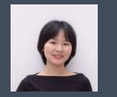
HI, WE ARE TEAM C6 !

With five members in our group from diverse backgrounds, we have a broad scale of experience, skills and abilities. All of us are ambitious to learn new skills from each other and from this course. We are always open-minded to different opinions, helping each other and find consensus solutions. The team dynamic is what we are really proud of.



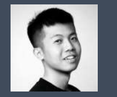
Francis is 29 years old and worked as an industrial designer and team leader in Asia for 6 years. In the team, she performed as a team coordinator, and assisted the team on the track when needed. Besides, she is obsessed with playing accordion.

Diede (25 years old) studied Industrial Design Engineering right here at the Delft University of Technology. Besides thinking of crazy ideas out of the box, she is a good listener and draws clear conclusions from the discussions within the group.



Wei (23 years old) did her bachelor in Internet and New Media at Sun Yat Sen University in China. She tends to keep everything organized and logical, while still being open to crazy ideas. She is interested in playing around with technical things.

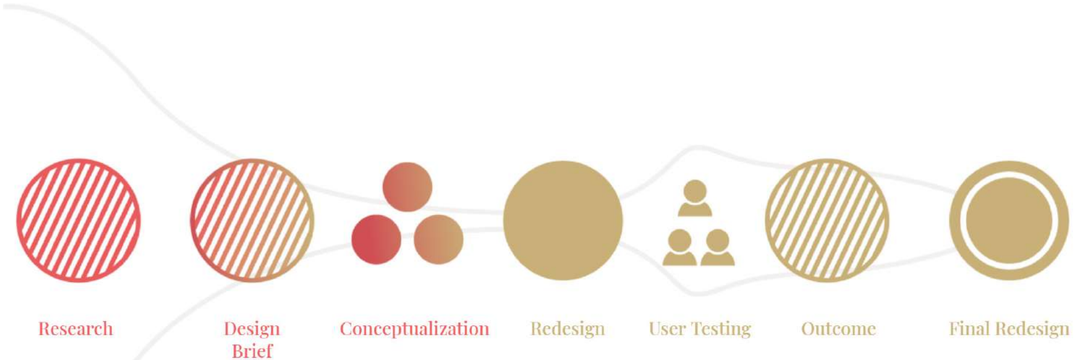
Marjolein (22 years old) did her bachelor Industrial Design at TU Delft and just started her first semester Design for Interaction. A good vibe in the group is important to her and she always tries to contribute to that.



Peicheng (24 years old) graduated from Jiangnan University with a bachelor's degree of Industrial design. He likes to visualize complex logic into infographics and is keen on design theories.

TABLE OF CONTENT

OVERVIEW OF OUR DESIGN PROCESS



INTRO TO THE ORIGINAL PRODUCT

Intro

The KENWOOD Cook easy CCL50 is a food processor that provides the user with a large range of cooking elements. With all those elements and presets on the food processor, the user is able to cook, boil, steam, heath and fry food, cut vegetables, weight food, and make dough. Next to the food processor, a big cook book and a Kenwood World App are provided.

Place in the Portfolio

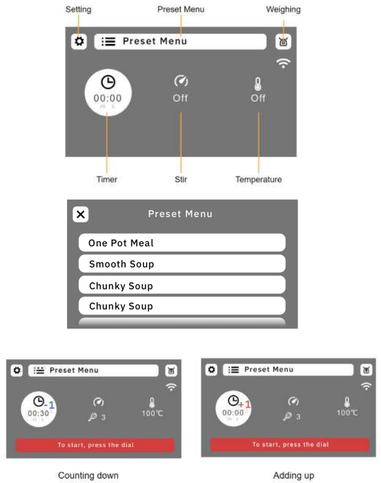
The positioning is very premium. Not the most expensive, Cooking Chef is more expensive. This is the first in this market with a screen this big.

Target Group

People who bake and cook because they think it is a good thing to do, not per se great fans of cooking. People who recognize the need to cook for themselves, family. Not super passionated.

Physical Appearance

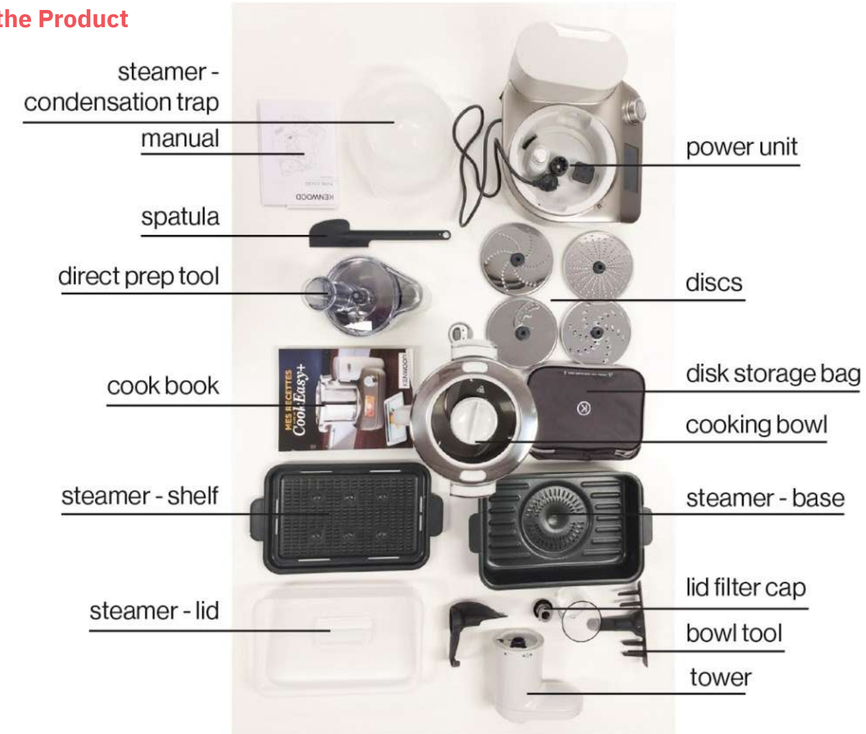
Digital Interface



Counting down

Adding up

Buid-up of the Product



CHAPTER 1
DEFINING DESIGN GOAL

In this stage, strengths and weakness of the origin product were analyzed with a cognitive walkthrough. After which, the target group was defined based on the positioning of Cookeasy+. And the overall design goal of saving time was decided, with three sub goals, which separately are, making the users feel guided, comfortable and in control.

COGNITIVE WALKTHROUGH

With testing the product ourselves first, we were able to point out the strengths and weaknesses of the CookEasy+. We unpacked the box of the CookEasy and cooked two meals with it. We conducted a cognitive walkthrough test (see in fig 1-1) and discussed the outcomes. This is needed in order to decide our main focus. In the following pages the strengths and weaknesses of the product are shown.

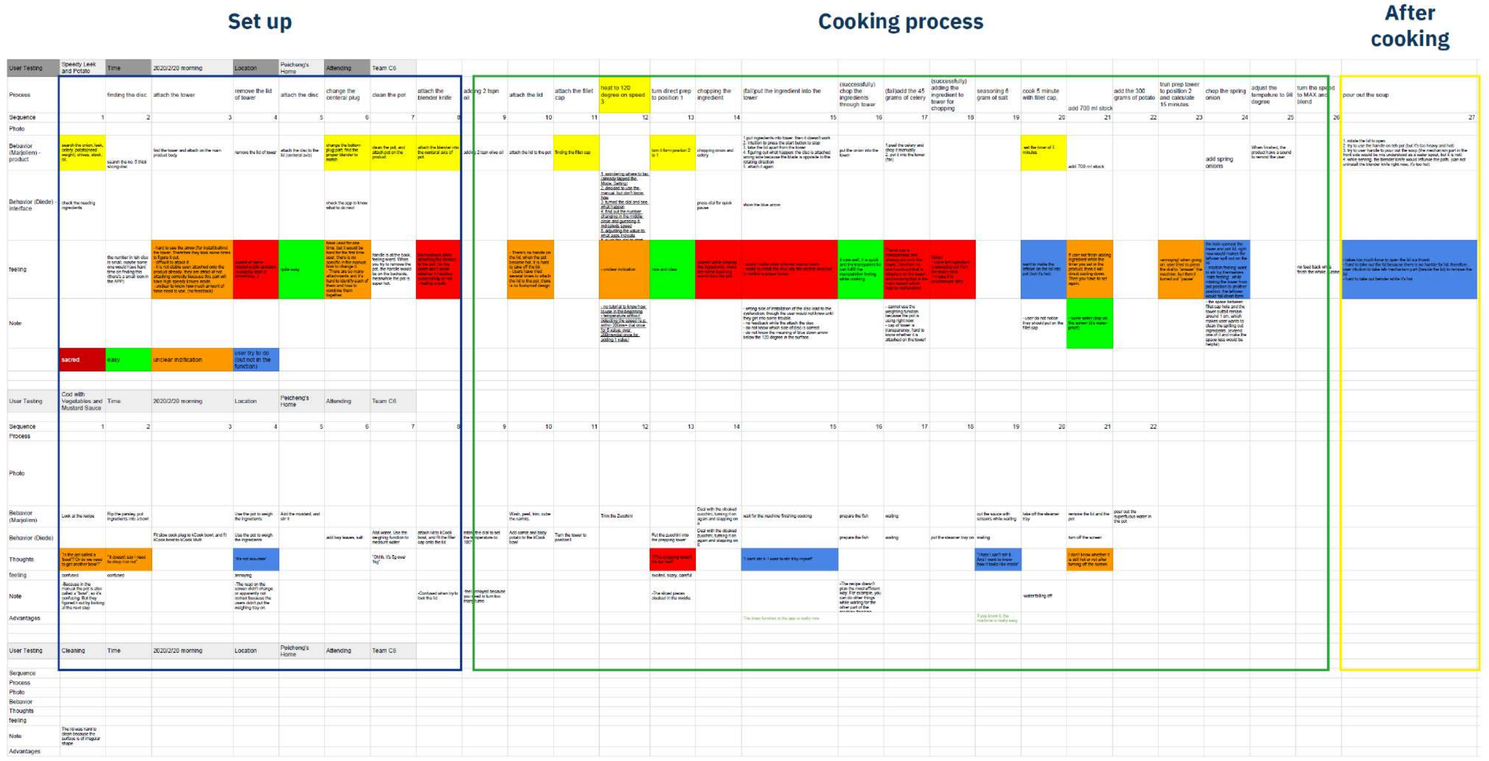


Fig 1-1: Note of Cognitive Walkthrough

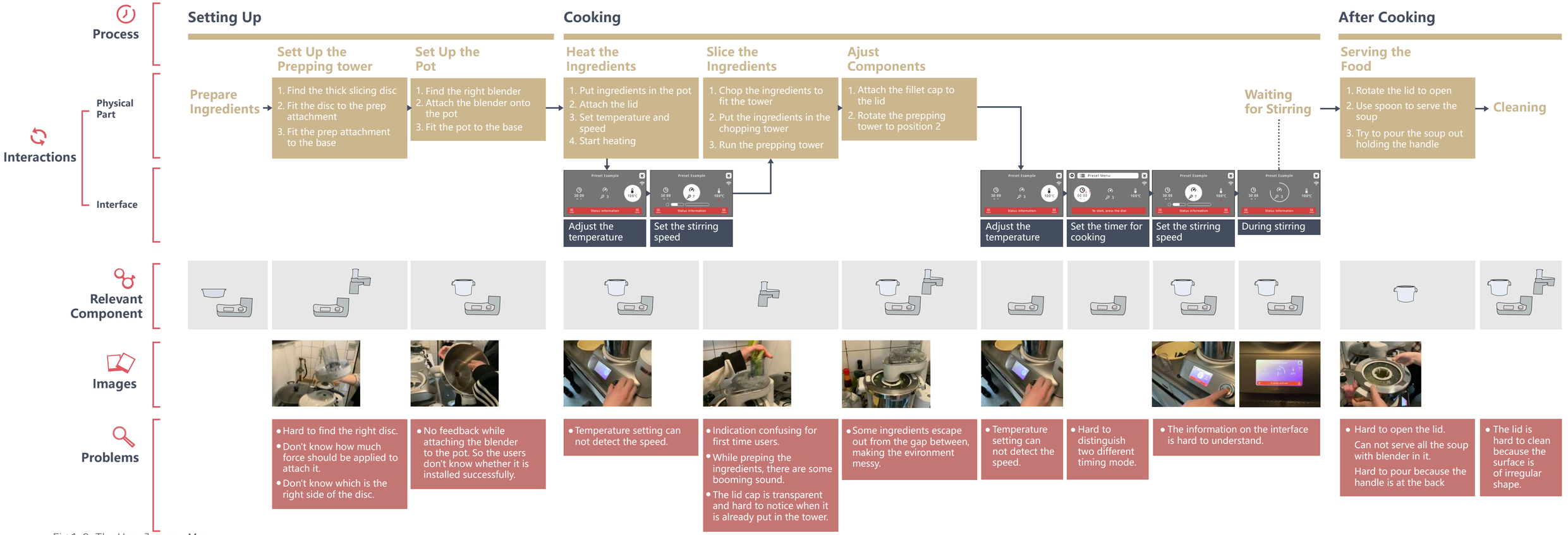
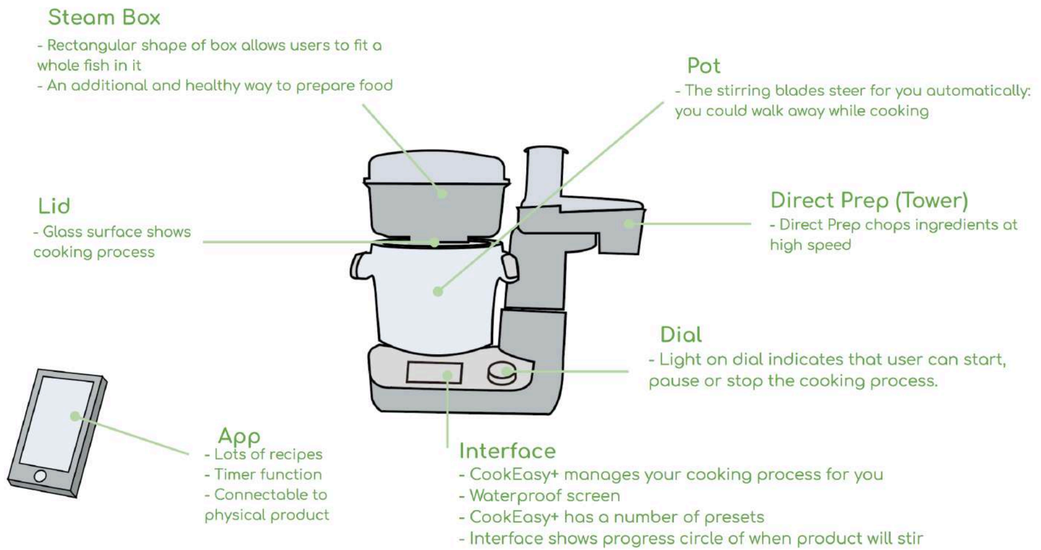


Fig 1-2: The User Journey Map

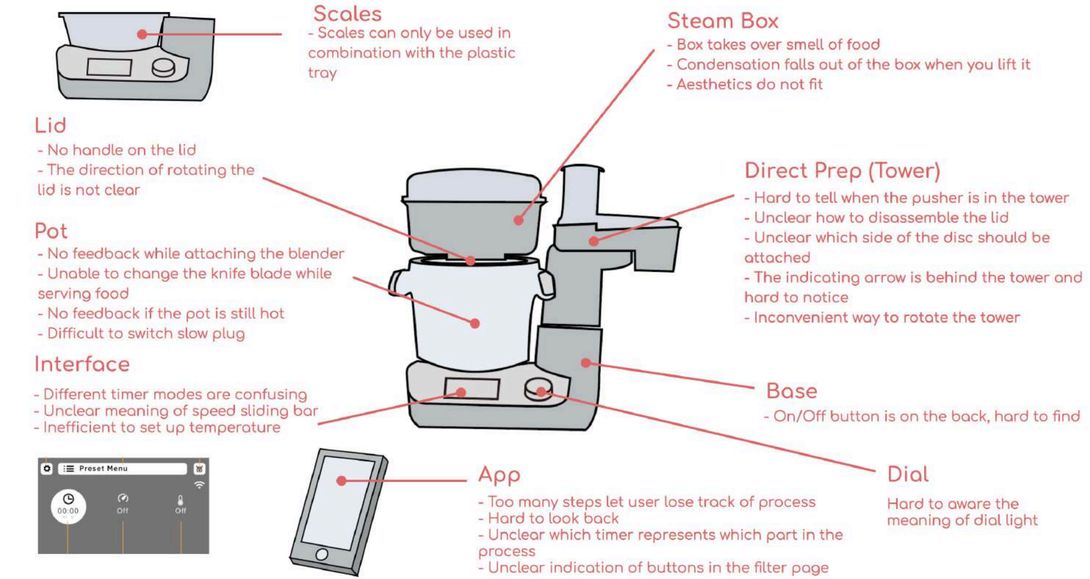
RESULT OF COGNITIVE WALKTHROUGH

STRENGHTS



RESULT OF COGNITIVE WALKTHROUGH

WEAKNESS

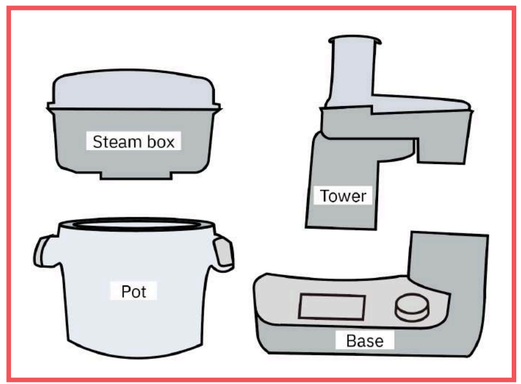


MAIN FOCUS

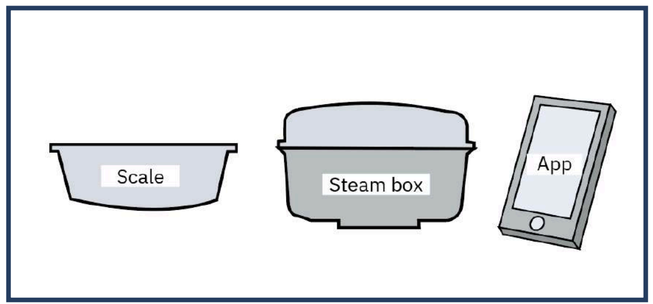
Components

The main focus is on redesigning the physical part of the product and its interface. This means that the application of an external device is not included. The physical part in our focus, contains the base, the pot and the direct prep tool. The steam box and scale are excluded because we have to narrow down our design scope and we saw more opportunities in the other parts during the research. Also, using the application is not necessary all the time when cooking with the CookEasy+.

Focus



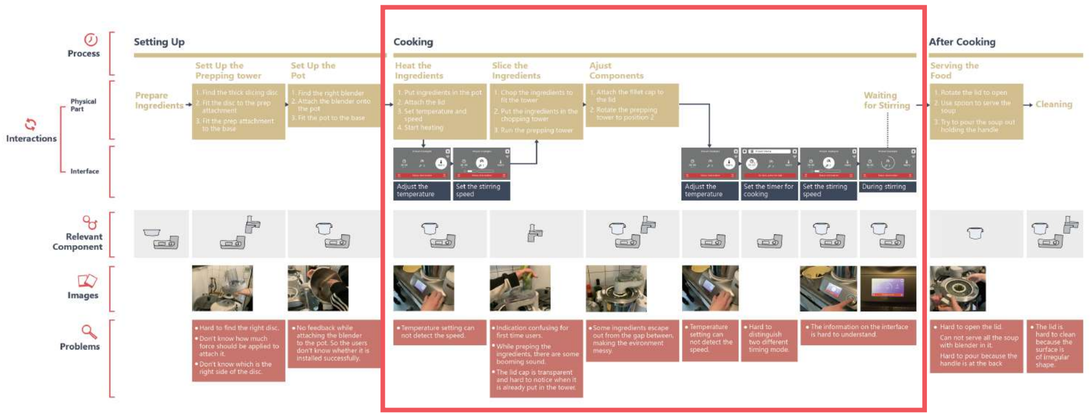
Not Focus



Process

In terms of the using flow, we will mainly focus on the cooking processes. Because the user should do the cooking process over and over again and it is the main stage of the user experience. Besides, in this stage, we saw more aspects we can improve based on our research.

Focus on cooking processes

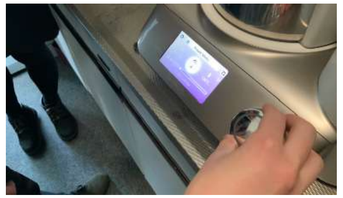


PROBLEM STATEMENT

Analyzing the product, we discovered that the CookEasy+ provides multiple functions to meet user various cooking needs. The cooking machine takes cooking tasks of the user away like chopping ad steering food and provides a lot of tools to cook. Besides, the CookEasy+ comes with a lot of recipes to make with the food processor, giving on the mobile application and the interface on the physical product.We also found some improvements, the three main categories are explained below.

Feel confused altering components while cooking

Some of these components look very alike and even after a longer time of use, it is difficult to see directly how the components should be assembled. The cutting blades in the chopping tower are examples of that. This results in confusion every time the users need to find the right components and assemble them.



Unclear indication in the screen

Some of the indication of the digital screen is unclear. And also, sometime it's hard to find the relation between the display and cooking process, which may cause some mistakes.

Unatural usage of physical components

Some inappropriate ergonomics of the design cause difficulties in daily use. For example, the way of opening the lid is tricky when the pot is hot and it take some time to figure out which direction to open.

PERSONA

Sara (42)

Sara is a lawyer living in Utrecht with her husband and two kids. She works 45 hours a week. In her pastime, she likes playing board games with her family or watching documentaries on her own.

Sara and Peter van Beek are married to each other and have two kids together: Jaimy and Bobby. The family lives in a semi-detached house near the center of Utrecht. They live in a friendly neighborhood with people with a middle-class income. Sarah cooks dinner for her family after her work during weekdays, while Peter and the kids take the job of cleaning and washing dishes.Both Sarah and her husband have full-time jobs and the kids attend some extra-curricular activities. The family doesn't spend a lot of time together but wishes to do so.

Adventurous	Caring	Devoted

"I want to spend more time with my family, but I'm always busy with household after work.

Brand

Chloé

Family Van Beek

Peter (43)

ICT manager, Works 40 hours a week

Jaimy (14)

Second year of secondary school

Bobby (11)

In his last year of primary school

Goals

- Decrease the time of preparing the meal
- Build a healthy lifestyle for the family
- Spend more time with family

Pain Points

- After working for a long time, Sara still needs to spend time on thinking about what she should cook, buying ingredients and preparing for the meal
- Little family time

DESIGN GOAL

To improve the user experience by making the usage more efficient to save time in cooking so that the people who have full-time jobs can have more family time.

VISION

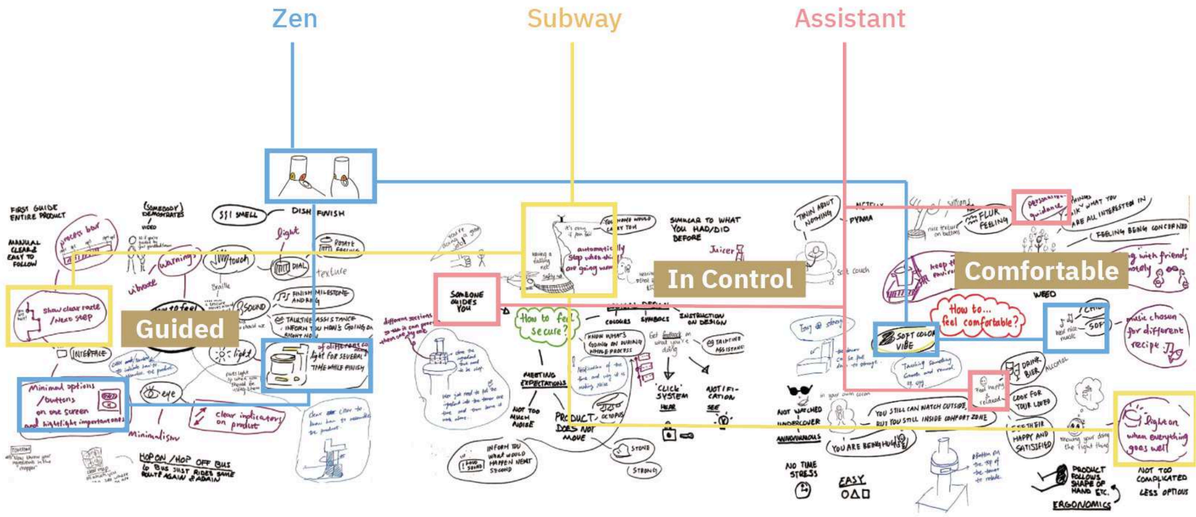
			
	Guided	**In control**	**Comfortable**
Desired Experience What the user should feel	User should feel led by the machine	User knows every-thing is under control and feels secure to leave it work alone	User feels natural and easy to use without paying much effort and attenttion
Interaction How this can be achieved	***Clear guidance*** for each step	Clear indication of the ***process status***	***Obvious affordance*** and ***ergonomic shape***

CHAPTER 2
IDEATION AND PILOT TESTS

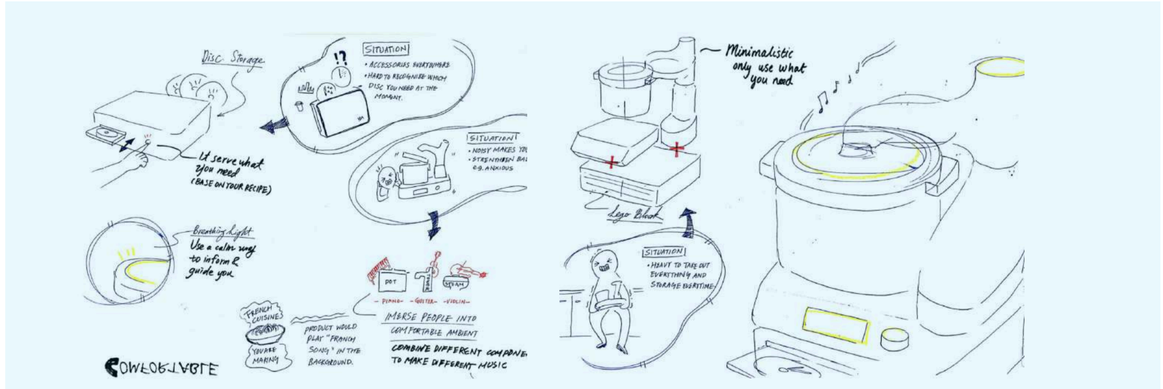
In this stage, we did brainstorm for three primary concepts to be tested, and conducted 3 user tests to decide which direction to work on.

To move forward to the next step, we concluded the results from the three concepts and its mock-up testing. There are 4 aspects we checked: guided, in control, comfortable and save time. After analysis, we decided to deepen our concept based on the idea of "Subway" and combine the advantages extracted from the other two.

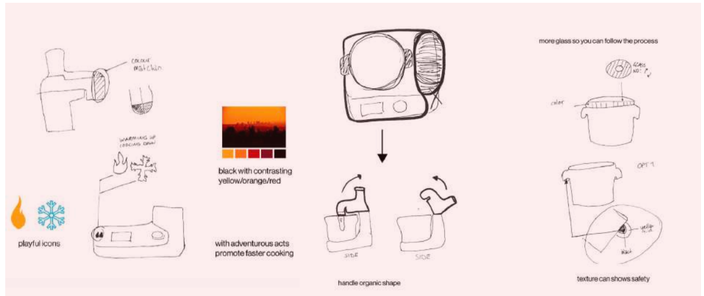
BRAINSTORM



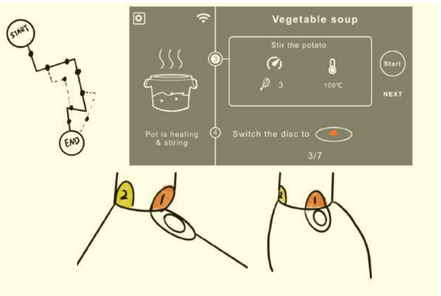
ZEN



ASSISTANT



SUBWAY

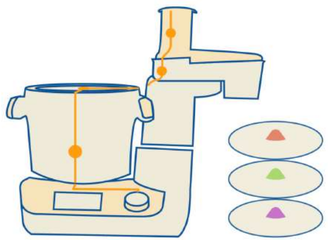


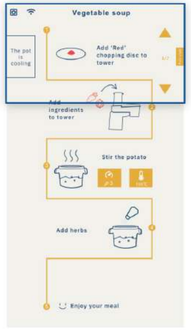
3 INTERACTION CONCEPTS

After the brainstorming, we clustered our ideas into three concepts: Zen, Subway driver, and Assistant. Where the Zen is all about the current step and showing minimal information to create a calm sphere, the Subway driver is showing the full cooking process to give the user a clear overview. The Assistant provides a character that guides the user through the process and gives extra tools to take cooking struggles away.

Subway

The concept Subway intends to guide the user clearly with lights on the physical product and with instructions and a clear overview of the interface.



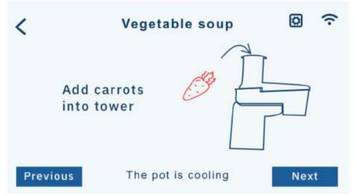


Key point

- Mostly, the cooking process is automated.
- Lights on the physical product and the information on the interface, keep track of what the machine is doing.
- When the machine needs the user to do something, it will make a rather high-pitched sound, to draw their attention.

Zen

The concept Zen intends to provide a calm vibe physically and mentally to assist the user to focus on the current stage which helps increase efficiency.

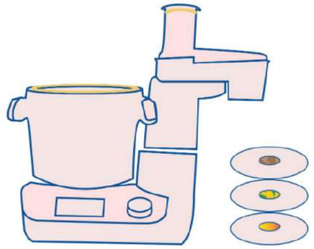


Key point

- Provide an immersive style and show only the current phase of the cooking process iin order to decrease the information load that might distract the user from the essential information.
- Cooking in a calm emotion will make the user work more efficiently and think more clearly what results in making less errors.

Assistant

The Assistant intends to solve the most time-consuming issue in cooking: stuck on what to cook. Therefore, the Assistant turns this process into a fast and exciting experience with an efficient tool.



Key point

- Provide you with personalized advice
- Clear guidance what you need to do (colour on product and character telling you)
- Giving the user the option, how much time they have and how much effort they want to put in making the meal.

CONCEPT TESTS

GOALS AND RESEARCH QUESTION

Overall:

In order to decide which interaction concept to further pursue, or which elements of which interaction concept show potential to be included into a single redesign concept, we conducted the pilot-pilot tests on the 3 initial concepts.

Research Questions:

Experience

Does the participant feel the proposed interaction fits the context?

Concept Qualities

Can the key points of each concept reach our design goal?

Save Time

Design Goals

Can the key points of each concept reach our design goal?

Guided, Comfortable, In control, Save Time

TEST PROTOCOL

	Description	Behaviors of the products			
			Zen	Subway	Assistant
0 Introduction of the context	Show storyboard, tell the users what the product is about.				
1 Select a recipe	Users choose the “potato soup” recipe.		Users can find the “tomato soup” recipe under the main meal category.	User can swipe through a few default recipes and choose one.	Randomizer function asks to fill in the ingredients you have at home.
2 Find the right blade and attach to the pot	Users choose the right blade among 4 blades provided on the table.	Physical	4 blades with number on the table.	4 blades with colours on the table.	4 blades with animal patterns on the table.
		Interface	Show message on the screen.		
3 Put tower in right position	Users rotate the prepping tower from position 1 to position 2.	Physical	Coloured marks on the tower to provide cues.	A coloured line that should be connected, provides use cue to put tower in right position.	Show lights.
		Interface	Show message with pictogram on the screen.		Message on the screen where character tells you to change direction of the tower.
4 Set temperature and speed	Users set the temperature and speed and proceed to the next step.		User can change the presets by first tapping on the speed/temperature and then scrolling to the desired setting.		The assistant on the screen gives the user a suggestion for the settings, which the user can then adjust.
5 Tell when the meal is finished	Notify the users when the meal is finished.	Physical		The product makes a beeping sound.	
		Interface	Show it on the screen.		Character tells you on the screen.

TEST OVERVIEW

Initially, we planned to do a pilot-pilot test, followed by an interactive concept evaluation with our target group. Sadly, due to the COVID-19 virus, we could not do this anymore. After we came up with 3 concepts, we made a protocol to ensure our research questions and test procedure (see in the Appendix 4) were the same.

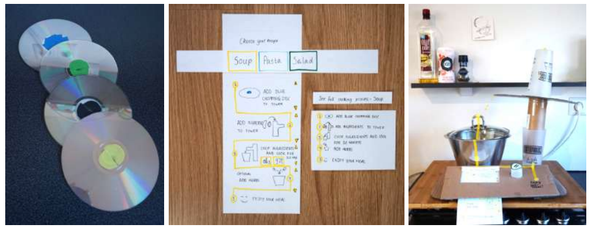
Three of us made a prototype at home and tested this with one participant. First, we showed the storyboard to introduce what our project is about. Then we went through the test in the protocol which included 5 tasks. During the test, we asked our participants to think aloud and interview their feelings. After the test, we asked them to fill in the questionnaire to measure how each concept fits the qualities (guided, in control, comfortable).

Due to the limitation of the COVID-19 situation, we could not gain quantitative measurement results since each concept just had one participant. So we recorded their feedback through video and interpreted their quotes. Then we combined and analyzed the positive and negative feedback of each task.

MOCK-UPS AND TEST PHOTOS

Assistant

Subway



Zen

FEEDBACK SUBWAY

Clear guidance of tower posotion

The yellow line should be completed to proceed to the next step

Easy to find the right disc

Colours are simple and easy to distinguish

"It says blue disc, I'm not an idiot!"

Feel secure to walk away from the product while it is cooking

As many actions are automatically done, the user feels safe to leave the product behind, while it is cooking

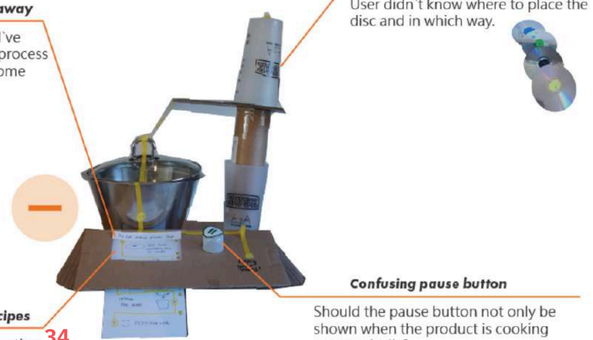
Feel secure to always have the option to pause the process

'BEEP' is an effective and pleasant way to call back the users attention

As long as it is not a jingle or an annoying sound

Being able to see an overview of the process in one screen, makes user feel calm

"I don`t like to be surprised by the product"



Unclear where discs should be placed

User didn`t know where to place the disc and in which way.

User wants to see overview right away

When he chose a recipe, he would`ve wanted to see an overview of the process right away, to know what would come

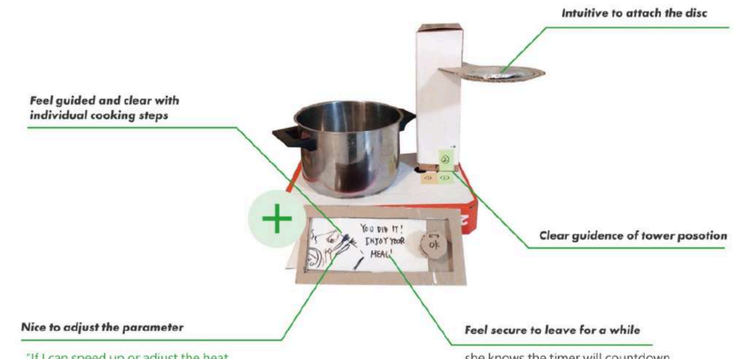
Confusing pause button

Should the pause button not only be shown when the product is cooking automatically?

User can only choose default recipes

He should be able to also choose other cooking modes, with more possibilities

FEEDBACK ZEN



Intuitive to attach the disc

Feel guided and clear with individual cooking steps

Clear guidence of tower posotion

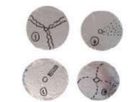
Nice to adjust the parameter

"If I can speed up or adjust the heat higher based on my need, it' s useful"

Feel secure to leave for a while

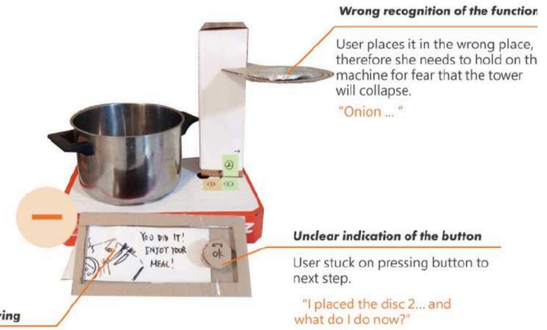
she knows the timer will countdown.

"I' m going to take care my baby."



Hard to recognise the number

User alter 2 times to find out the correct one.



Wrong recognition of the function

User places it in the wrong place, therefore she needs to hold on th machine for fear that the tower will collapse.

"Onion ... "

Unclear indication of the button

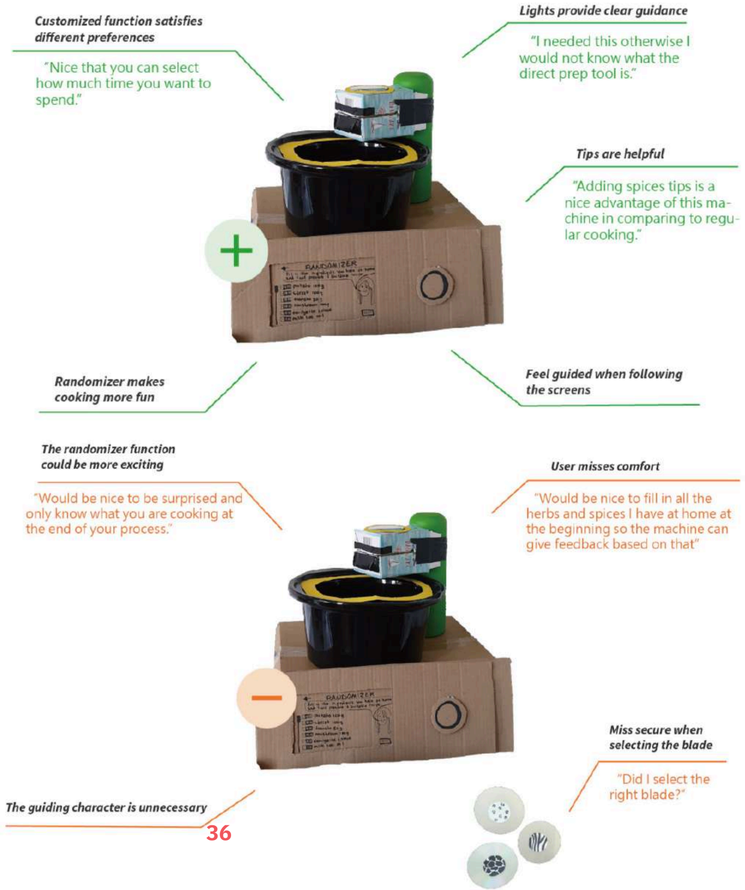
User stuck on pressing button to next step.

"I placed the disc 2... and what do I do now?"

Repeatable songs is annoying

if the songs is always the same, it boring and annoying

FEEDBACK ASSISTANT



WEIGHTED OBJECTIVES EVALUATION

Criteria

The different criteria have been extracted from the Design Goal; the redesign should save the user time, the user should feel in control and guided while using it and the design should be comfortable to use. The criteria have been divided into subcriteria which correspond with the tasks the participants were given during the prototype test.

The last criterium, comfortable, was difficult to measure in the prototype test. This criterium is both about the materials, looks and feels of the product, but also the ease of use of the product. We were not able to prototype the looks and feels, due to the lack of materials we had at home. We were also unable to test one of the essential parts of the concept Zen: the sound of the different elements make during cooking.

	Weight	Score	Total	Score	Total	Score	Total
Saving time	*10*						
- Choosing recipe	5	3	15	8	40	8	40
- Changing settings	5	3	15	9	45	6	30
			(30)		(85)		(70)
In control	*10*						
- Choosing recipe	2	4	8	7	14	8	16
- Changing settings	3	4	12	5	15	3	9
- Walk away during the cooking	3	8	24	8	24	8	24
- Know when the meal is ready	2	5	10	8	16	7	14
			(54)		(69)		(63)
Guided	*11*						
- Selecting the right blade	3	6	18	10	30	7	21
- Turning the tower	3	9	27	7	21	1	3
- On the interface	5	7	35	8	40	7	35
			(80)		(91)		(59)
Comfortable	*0*						
- Overall	0	-		-		-	
TOTAL			164		245		192

Rating

These criteria were rated from 1 to 10 and then multiplied by the weight factor. This factor was derived from the importance of the subcriteria to reach our design goal.

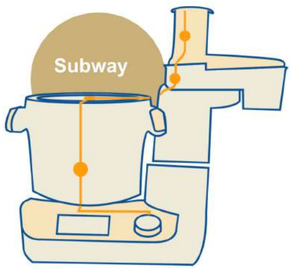
Conclusion

From this comparison of the concepts, the Subway concept comes out best with 245 points. This concept scores best on each separate criterium; saving time, feeling in control and feeling guided.

DESIGN STRATEGY

To move forward to the next step, we concluded the results from the three concepts and its mock-up testing. There are 4 aspects we checked: guided, in control, comfortable and save time. After analysis, we decided to deepen our concept based on the idea of "Subway" and combine the advantages extracted from the other two.

Basis



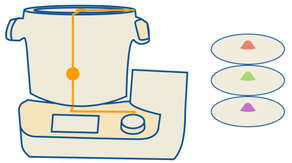
+Valuable elements from other concepts

- Confirmation that the blade is attached right
- Larger screen
- Use pictograms of the parts of the products in the interface

Overall flow

We decided to take the concept Subway as our main concept because this one seems to be most clear and gives the best guidance. The guidelines that light up during all stages of the process form the basis of the concept.

At Machine

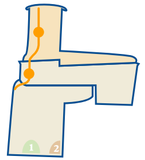


Base & Pot

To achieve the experience of clear guidance, there are two points worth to add on.

Firstly, the light bar connects to each component throughout the whole machine including pot, base, and tower. The user can follow the cooking process by following the coloured line and the lights on the product.

Secondly, the material and color matching of the products are going to apply a more neutral one in order to provide the calm vibe.

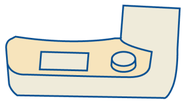


Tower

The tower stays in the same position as it is on the current CookEasy+. The guidance of the Subway concept remains in this part.

Firstly, the light on the tower will blink to tell the user his action is needed on this part of the machine.

Secondly, the user is guided by the coloured clue on the product, knowing which position should the tower be turned to.



Interface

Enlarging the interface on the physical product brings comfort to the user since more of the process can be shown on the screen.

Furthermore, the test with the Assistant showed that the user needs a confirmation that the blade that needs to be used for a recipe is attached right.

RECAP PHASE ONE

RECAP PHASE ONE

In February of this year, one of the design teams of the TU Delft started a redesign project for Kenwood. They would make a redesign for the food processor CookEasy+ regarding usability and user experience. This product facilitates easy daily cooking for a large target group. It comes along with a set of interchangeable parts, giving users a broad choice of cooking possibilities. They can use the product to cook, boil, steam, heat and fry food, also they can chop vegetables in different styles, weigh food and make dough or soup. Besides the food processor, a full colour cookbook and a Kenwood World App are provided.

RESEARCH

In order to quickly get a clear overview of the product, a cognitive walkthrough was done by the team members. While two people cooked a few recipes using the product, the other team members observed and documented the process by taking notes and pictures, and filming it.

This was then analysed, finding multiple areas to improve. A user journey map was made to map out the different problem areas in the cooking process. The process was divided in preparing to cook, cooking, serving the food, cleaning the product and storing it.

Figure 1: The original Kenwood CookEasy+

FOCUS

The team decided, partly due to limited time, to bring focus to the project. According to the journey map, the biggest improvements could be made in the cooking -part of the process. Besides, the team chose to focus on the parts of the product that are mainly used while cooking (figure [FIXME]): the base, the pot and the direct prep tool.

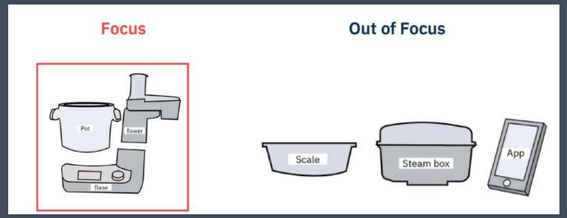


Figure 2: The persona of our target user group

TARGET GROUP

In order to make a good redesign, the team created a persona that represents the target group. It consists of an adult with a family. Both parents work full time, with an income above average, which affords the family to live in a semi-detached house with a big kitchen. The product suits their lifestyle and the adults like to cook healthy and tasty food for the family. At the same time, the family likes to spend more time with each other.

This target group currently fits the positioning of the CookEasy+. The high price of this product decides that it should be a high-end product aiming at the middle-class group. Secondly, the key strength of the current product is saving people's effort and time of cooking, which means it is aimed at people who have full-time jobs and have strong needs to save time in cooking.

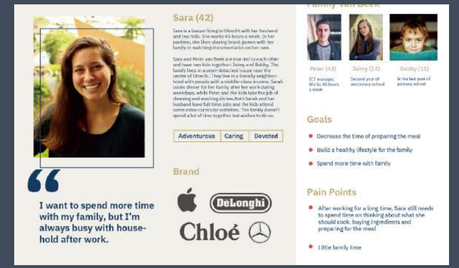


Figure 3: The persona of our target user group

DESIGN GOAL

After the analysis of the current product, three main problems were found. First, the guidance for first time learning is not clear enough. The CookEasy+ has many possibilities and functions, which make both the physical as the digital parts of the product complicated to understand it at from the first use. Second, the user feels insecure to leave the product alone while cooking, due to the loud sounds it can make. Also users do not always know what they have to do, for instance when assembling a cutting disk, they do not know how much force is needed. Third, there are several invonveniences during the everyday use that are not comfortable.

Therefore, the design team set up the design goal (figure 4). The three elements (feeling secure, feeling comfortable and feeling guided) are to improve the user experience and contribute to the goal of saving time, which helps our target group.

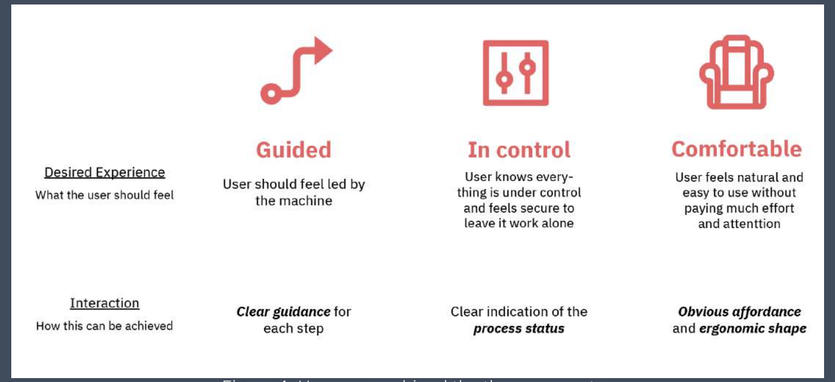


Figure 4: How we combined the three concepts

THREE CONCEPTS

On basis of the design goal, the team came up with three concepts which were all tested with a tangible mock-up, made out of cardboard and other material the team members had at their homes. The data of these tests were analysed and the team proceeded with one concept, thoughtfully adding certain elements of the other concepts. With this redesign, the second phase of this project was started: testing and evaluating the redesign.

Figure 5: One of the three mock-ups

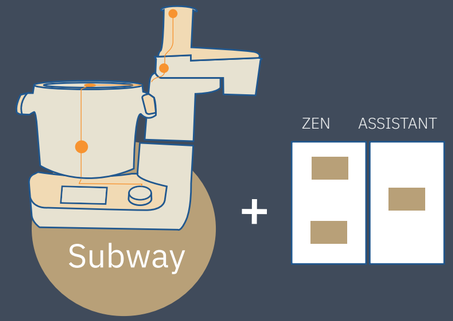


Figure 6: How we combined the three concepts

CHAPTER 3
THE FIRST REDESIGN

From the previous phase, it was concluded that several points can lead to our main redesign goal of time-saving, and reached the three desired experiences: comfortable, guided, and under control.

Therefore, aspects of the product such as the (1) the product, (2) the interface and (3) the interaction, will be elaborated in this chapter.

3.1 THE PRODUCT DESIGN

First of all, the fundamental layout and way of use of the product were kept the same, because it can be concluded from the first research that the basis of the product is good. For instance, the positioning of the direct prep tool, the pot and the interface remained the same (figure 3-1).

Figure 3-1: Ways of Usage

Figure 3-2: Simulation of the Context

To reach a feeling of guidance, light strips were designed throughout the whole product to indicate the next step of a recipe. Both the light strip and the redesigned flow on the interface contribute to increasing the feeling of being in control.

Lastly, we adjusted each detail of the product to let the user feel more comfortable while using it (figure 3-3). These design choices are further elaborated on the following pages.

See the Rendering process in Appendix 1.

Figure 3-3: Product detail

The Light Strip

Inspired by the line-route map in subways, a light strip was made on the product, to guide the user through the cooking process. From the cognitive walkthrough that was done at the start of this project, we found that the user could be confused about what the product was doing. This light strip shows which part of the product is currently operating, at each moment during the cooking process.

For example, when the user uses the direct prep tool, the line under the direct prep tool will light up (figure 3-4). **This is also very helpful for users who walk away from the CookEasy+ during the cooking process**, which is possible because the product is automated for a major part. When users return to their CookEasy+, they can immediately see where in the cooking process it is. Therefore it also saves time on finding out what the product is doing.

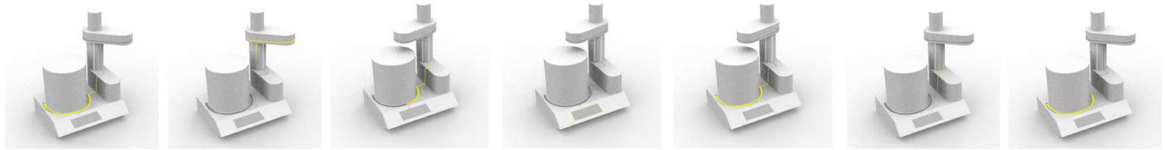


Figure 3-4: Display of the Light Strip at Different Step

Also, the light strip underneath the pot indicates whether it is hot. In that case, the light will turn orange or red, and the user will be warned. In the original product, only a warning telling the pot is heating was shown on the screen. This was not noticeable enough, therefore this element was added.

Lastly, the light adds to the aesthetics of the product, making the product look more luxurious. This fits the price of the product.

Unlock Lid Device

This new way of unlocking the lid costs the user less effort and is indicated more clearly on the lid by using arrows pointing in a clockwise direction (figure 3-5). It gets rid of the feeling of discomfort and confusion the users had when unlocking the lid of the original product; they had to put their hands into an uncomfortable position, exerting more pressure with their thumbs than felt natural, not sure whether they were doing it correctly.

Figure 3-5: Details of The Unlock Lid Device

Pot Handles

These new pot handles make it easier to hold the pot and pour freshly made food out of it. The large grip and the placing of the handles on the product, gives more comfort to the user.

Double Safety Lock

The first product analysis showed that it was unclear how to remove the pot easily from its base, when serving food or cleaning it. Besides, it gave a discomforting feeling. Therefore, the form of the handles have been changed to a more comfortable position. Two safety locks have been integrated into the handles, to make it easier to remove the pot from its base.

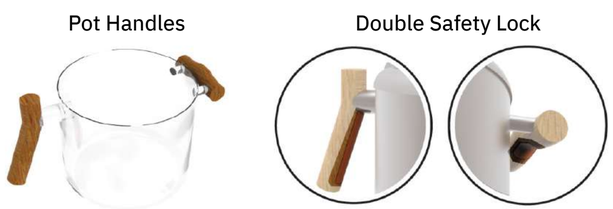


Figure 3-6: Details of Pot Handles and Double Saety lock

Direct Prep Tool Button

The icon of the direct prep tool button, we captured the meaning of on/ off. Therefore, we altered the icon into a typical on/off icon.

The Power Button

The power button has been relocated from the back of the product to the left side of the product. This is done because when we did the first trial of user testing on our own with the original product, we spent some time figuring out the correct position.

The Dial

To be alike with higher-priced products, we chose the real metal as our material of dial. This idea is from some inspiration of the high-end speaker and its product design detail.

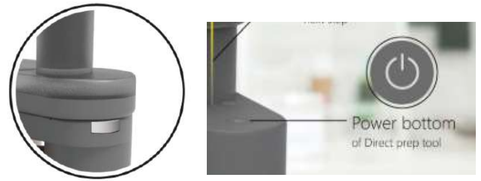


Figure 3-7: Details of The Tower Button

Figure 3-8: Details of The Power Button

Figure 3-9: Details of The Dial

Design Inspiration

Based on the results from the jogging walkthrough, the user felt slightly anxious and nervous when they used the cooking machine. Hence, decreasing the negative feeling and providing a more calm and zen feeling was our starting point of product design.

In addition, the target user of Cookeasy+ aims at people who have a decent job and living around 35-50 years old. To fit the style of their house interior, a modern and steady design style was considered as an important design principle.

Material

See the details of the material in figure 3-10.

For the color selection, deep style is a common color palette for designing the kitchenware, and a clever choice to create the sense of stability. The main surface of the product is made with polished plastic which is a modern element of product design and relevant to the user's past experiences like the touch screen of the smartphone.

For the pot, we chose the matting stainless steel for easy-cleaning and having a good match for other parts of the product.

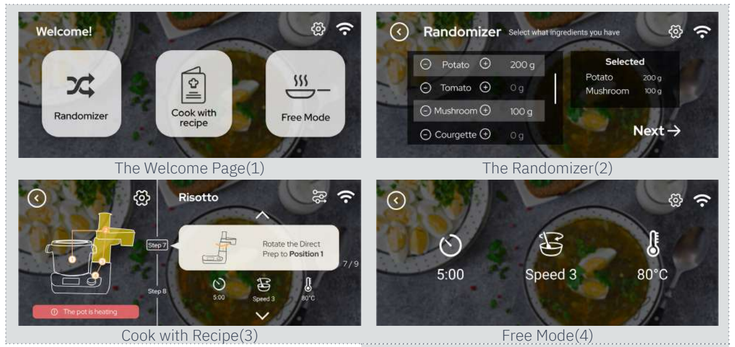
For the direct prep tool, the main body was all matte plastic, and the lid was semi-transparent of smoky black plastic. Furthermore, the measuring cup was invisible when we did the user testing, which leads to the color difference from the lid of the direct prep tool.

Figure 3-10: Details of The Material Used

3.2 THE INTERFACE DESIGN

Besides the physical product, also the interface has been redesigned, in order to improve the user flow and to make it consistent with the design of the rest of the product. In appendix 2, all the screens are shown in a flowchart. On the following pages, the five main screen designs are highlighted and described.

(1) Welcome page, from this page the user can navigate to three different categories: **(2) Randomizer**, **(3) Cook with recipe** and **(4) Free Mode**. When in the 'cooking with recipe'-mode, users can see a **full overview (5)** of all the steps they have to take in the recipe.



The Welcome Page(1)

The Randomizer(2)

Cook with Recipe(3)

Free Mode(4)

Full Steps(5)

Figure 3-11: Interface Design Screens

Design Highlights

Welcome Screen
The welcome screen (figure 3-12) shows the user three cooking options right away. They can choose how they prefer to cook at that moment. The clear icons that illustrate the options, make the interface understandable for more people. By tapping on the option, the user will proceed to that mode.

Randomizer
This option makes it possible for users to follow a random recipe using ingredients they have at home. This helps users to save time, as they do not have to think about what they will cook and the groceries are already in their homes.

The randomizer function (figure 3-13) only consists of two screens before starting the recipe mode. The user will not know what they are cooking, until the meal reveals itself at the end.

Free Mode
Users that are already more familiar with the CookEasy+, or want to follow their own recipes, can use this free cooking mode (figure 3-14). They can adjust the temperature, stirring speed and time that the product cooks as they wish. This can be done by clicking on the setting and adjusting these by turning the dial. There is no further guidance in this mode.

Figure 3-12: Welcome Screen

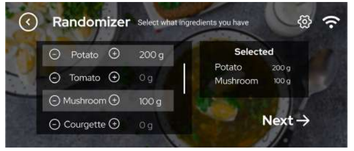


Figure 3-13: Welcome Screen

Figure 3-14: Free Mode

Cook with recipe
After users chose a recipe they want to make, the recipe is shown step-by-step on the screen (figure 3-15). At each moment, the user can see where in the process they currently are and how many steps are still left. This guides the user and gives them a feeling of being in control.

A visualisation of the CookEasy+ is visible at the left through the entire cooking process. This helps users to clearly understand which part of the product is currently operating. The numbers on this overview give a preview of the order in which the product parts are used in the recipe.

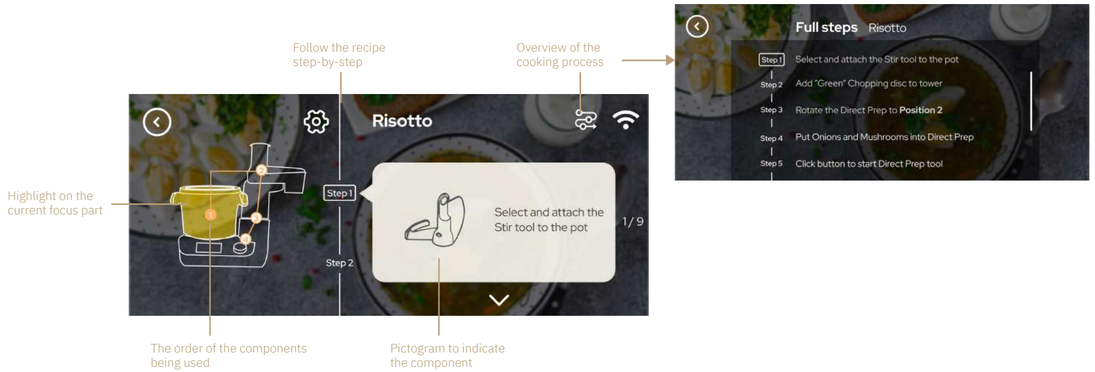


Figure 3-15: Details of Cook with recipe mode

The pictograms help users to recognize the product parts or settings faster, such as a stirring tool for in the pot. These make users feel more comfortable and confident, and helps them to spend less time on searching the right parts. This has a positive impact on our main goal: saving time while cooking.

The system provides settings, preset according to the recipe (figure 3-16), to minimize the users' effort on setting the temperature, time and speed. If needed, the user can still adjust these settings, by pressing on a setting and turning the dial.

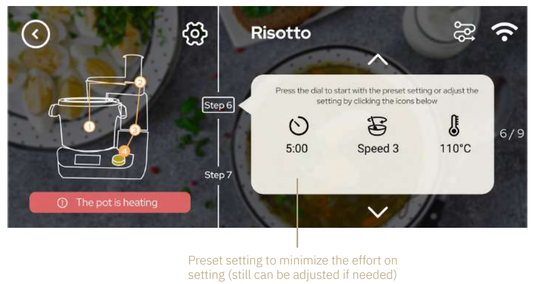


Figure 3-16: Preset setting

Full overview
Lastly, if users want to see an overview of the full recipe while cooking (figure 3-17), they can find it by clicking on the icon in the top right corner of the screen in the cook with recipe mode.

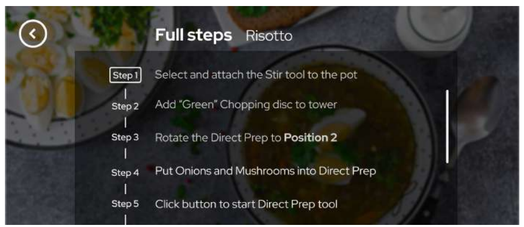


Figure 3-17: Overview steps

3.3 THE INTERACTION

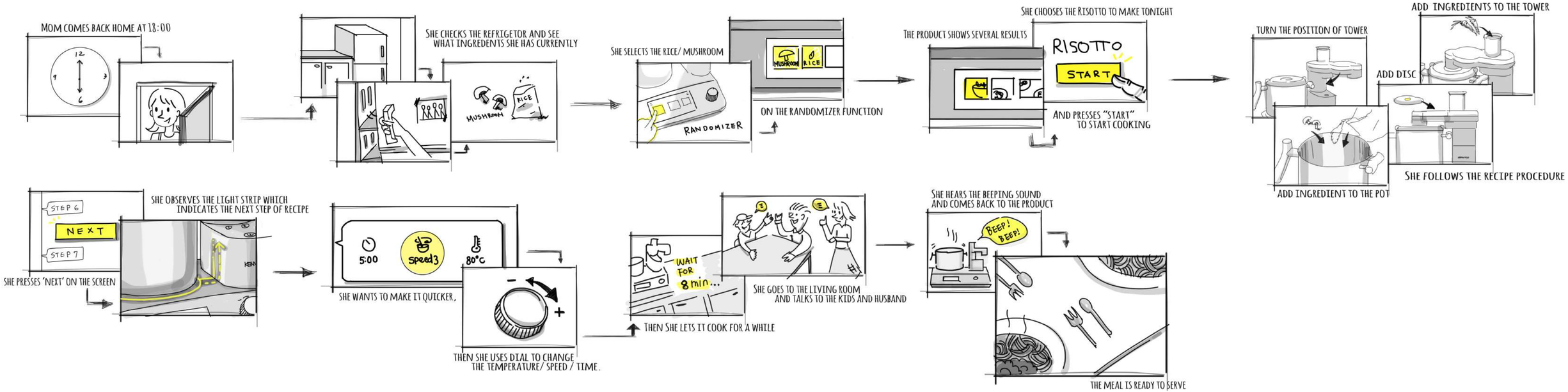


Figure 3-7: Interaction with our redesign product

CONCLUSION CHAPTER 3

In this first redesign, the fundamental layout like the positioning of the prep tool, pot and interface is the same as in the original Kenwood Cookeasy+. This is because the first research, that included a cognitive walkthrough, showed that this layout is good and the most room for improvement can be reached by making smaller changes.

The main goal is to help mothers saving time while cooking, by making them feel guided, in control and comfortable.

Three main changes in the first redesign contribute to achieving this.

- First of all adding the added light strip on the redesigned physical product makes users feel guided and in control. The user can follow all the steps by following the light on the product. The new flow on the interface will make the user feel in control as well.
- The new flow on the interface will as well make the user feel in control. All the steps are now displayed in an overview and clear icons show on what part of the product action is needed together with showing what tools are needed for these actions.
- Lastly, details on the product as the new design of the handles and the new unlock lid design make the user feel more comfortable.

This first redesign will be tested with multiple participants in the next chapter, to find out whether these product changes actually do help to achieve our goals.

CHAPTER 4
USER TESTS

The first redesign is tested with an online prototype. Using a test protocol assures us all tests will be carried out the same. The input of seven user tests gives insights on how to improve the product to the final design.

The user test results are also shown in this chapter. The collected data is analyzed and visualized, after which conclusion is drawn based on our analysis.

System Usability Scale (SUS) is used to access the usability. The statements from our participants are clustered to have an overview on their feelings and impression of this product. These clusters are analysed to give insights on the problems based on the completion of each tasks.

Then the insights are mapped to different screens of the interfaces and to different components of physical product, as support for revising our concept.

4.1 USER TEST PLAN

4.1.1 The Research Question

Our main goal of redesigning **the cooking machine is to help mothers to save time in cooking.** To reach this goal, we expect the cooking experience with this product should make the user feel comfortable, in control and guided. Before starting user testing, we formulate research questions based on the design goals we set up.

Our research questions is:

Do the participants feel guided, in control, and comfortable while using the redesign product of the CookEasy+?

The goal is to test if the redesign of the cooking machine saves the user more time in the cooking process, compared to the original product. However, it is not easily measured that how much our redesign concept helps to save time because we couldn't directly count the time of finishing a recipe, and characteristics of the original cooking machine might make users already see the product as time saving. Also it is not doable to make a fair comparison between a real and modelled (digital) product.

It is chosen not to compare the redesign to the original product. As an alternative, we will ask people in the interview whether they have the feeling of being guided, in control and comfortable while using the cooking machine because those elements will contribute to saving time. Besides, the success rate of participants finishing the tasks is another measurable target, so we will research this as well.

The observer will take notes during the product testing and the interview including the questionnaire at the end. With direct and indirect questions answers on the research question will be sought.

4.1.2 Test Overview

Before we could start testing, we made a digital prototype and a test protocol to make sure that every test would be executed in the same way, and the results could be easily compared to each other. Following, we tested this first version with the coaches, and improved the prototype and protocol. At the same time, every team member recruited a couple of participants. This was mostly done via friends and family.

Next, it was time to execute the user tests. These were done online via a video-call with the participants and two members of the design team, one as an observer, one as a host. After that, the raw data was analysed with a SUS analysis and a qualitative analysis. Then, the group had an online discussion with each other, and last, conclusions were made for the final redesign.

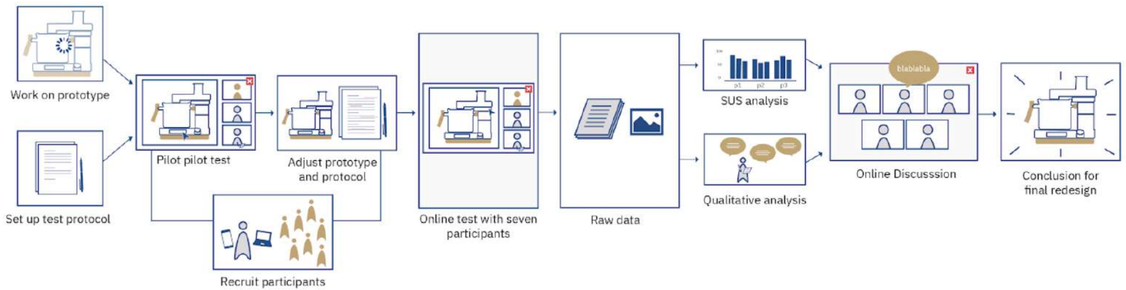


Figure 4-1: Overview of the testing process

4.1.3 Test Protocal

With the research questions we set up a test protocol. The extended explanation of this can be found in appendix 3.

		Time	Description
1	Consent form	5	Show beforehand and ask for permission.
2	Introduction		Informal chat, showing introduction form, ask if the participants have questions and can start sharing their screen.
3	Testing	10	User executes the online test, host leads the test, observer fills in the note-taking form.
4	Evaluation	20	This consists of the SUS questionnaire and an interview.

Figure 4-2: The test protocol for during the prototype tests.

Before starting the user tests, all participants were asked to agree on the consent form (appendix 5). During the introduction it is important that the participants feel at ease by having an informal chat.

The participants read an introduction page (appendix 5) to avoid that everybody is not getting the same information beforehand that might result in acting different in the user test.

During the test, the participants share their screen and follow the instructions that the online prototype gives. The host of the test leads the test and intervenes when needed, the observer looks at the action that the participant makes and the verbal and facial expressions the participant shows. This is all collected in the note-taking form, which can be found in appendix 8.

The evaluation is intended as a starting point for a discussion to get more feedback on our digital prototype and product.

4.1.4 Participants

In figure 2-3 several characteristics of our seven participants are shown. Their gender, nationality, age, amount of kids, and the amount of days a week that they cook are shown. Also they tell you how they feel about cooking, in most cases what the occupation of their partner is and at which time they come home, and what their own occupation is.

Although our target group are working mothers, not all of our participants meet those requirements. Due to the chaos of the COVID-19 situation for us and our target group, it was harder to find working mothers who had time and wanted to help us with this user test. Some of the mothers with whom we tested, do not work or do not have their kids living with them anymore. However they were all asked to imagine to have kids to cook for or imagine their kids were still at home.

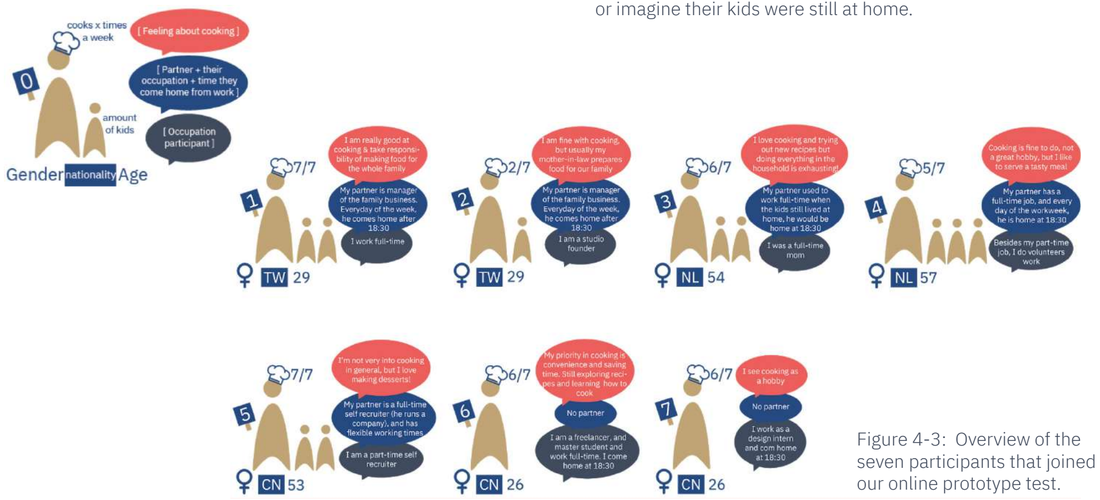


Figure 4-3: Overview of the seven participants that joined our online prototype test.

4.1.5 Prototype

The prototype basically contained two main parts: the physical product and its interface. Due to the limitation of COVID-19, we implemented our testing entirely on-line. Therefore, we built up our physical product through 3D modeling via Rhinoceros and rendered it in Keyshot.(appendix 1) (see figure 4-4)

With respect to the interface, we designed the complete flow chart with Figma.For the testing prototype, we use Adobe XD as our main testing platform and present the whole prototype process through this with our participants.

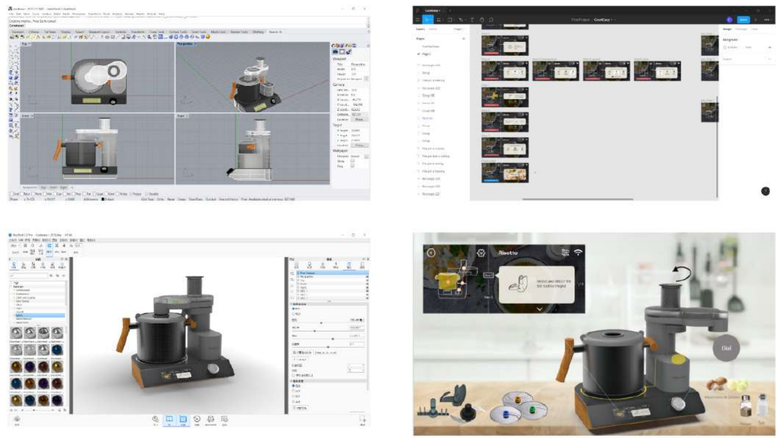


Figure 4-4: From upper left to lower right: Rhinoceros, Figma, Keyshot and Adobe XD

4.1.6 Online Environment

After these preparations, on may 26th we executed 7 user tests. Due to the COVID-19 situation, these tests were done through an online video call, from our homes. The participants were invited to a video call, in which they received the link to the prototype. The video call was via zoom and the prototype was made in Adobe XD and could be accessed through a weblink.

Link to the prototype:
https://xd.adobe.com/view/f810453d-822b-4e30-5b8a-2f2ee7057366-8e21/

Procedure:

First, the interviewer showed his/her screen to show an introduction of the product.

After that, the participants start sharing their screen while executing the testing of the prototype.

After they tested it, they filled in a questionnaire.

Then, interviewer asked questions while sharing his/her screen again with the prototype open. So the participant could look at the product while answering the questions.

It was quite chaotic to switch each time with the screen sharing. But this was needed to observe the user in the best way possible in the online environment. In the next chapter, we will discuss the outcomes.

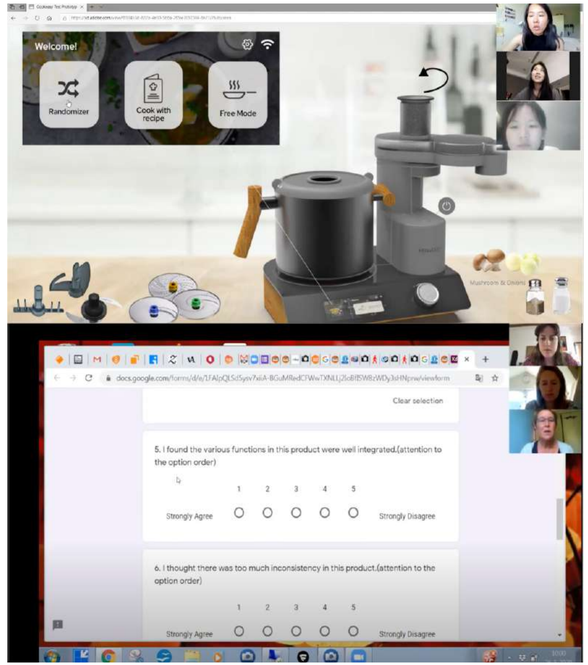


Figure 4-5: Participants taking the test via Zoom call

4.2 USER TEST PLAN

4.2.1 Overview of the Analysis Methods

In the following pages, these five methods would be used to analyze the test results. Here's an overview of them.

Task completion: give an overview and measure the difficulties when participants went through the steps.

Difining the severity: to give the problems priorities and for further design decisions.

The System Usability Scale (SUS): rate the usability and learnability of the redesign.

Cluster the statement from the interview: to find the structure in the data so that elements of the same cluster (or group) are more similar to each other than to those from different clusters[1].

Insight mapping: to have a overview of the all insight visually.

Reference: [1] Assistant Secretary for Public Affairs. (n.d.). System Usability Scale (SUS) | Usability.gov. Retrieved from https://www.usability.gov/how-to-and-tools/methods/system-usability-scale.html

4.2.2 SUS Analysis

The System Usability Scale (SUS)[1] is used to rate the usability and learnability of the redesign. In the SUS the participants rate ten items from (1)strongly agree to (5)strongly disagree. The average SUS score of the group of participants is used to find a percentile score that measures the perceived usability. The SUS questionnaire can be found in the appendix 6.

The average SUS score of our design is 78.9. As the table shows the level of the score, the received score means that the usability of the product is GOOD. And for the learnability, the design received an average score of 77.1. The redesign concept is perceived to have a high usability score with the SUS.

SUS Score	Letter Grade	Adjective Rating
Above 80.3	A	Exellect
Between 68 and 80.3	B	Good
68	C	OK
Between 51 and 67	D	Poor
Below 51	F	Awful

Reference: https://www.usabilitest.com/system-usability-scale

Figure 4-6: The SUS score and results from all the participants.

4.2.3 Statements Overview

In this page, the statements extracted from the interviews after the test were clustered, to give an impression on what is the participants' overall feeling of the experience.

How would you describe the experience of using this product?

We asked the pariticipants to describe their experience with serveral adjective, and here are some of the replies.

Clear, Easy to Follow

"It is foolproof. All I need to do is following the guidance."

Convenient

In control

"It shows the cooking time left, which makes me feel safe to leave and do other things."

Feeling too restricted

"The instruction was too specific, it told me exactly how much salt I need to add, that I feel no freedom to tailor the recipe for my own preference."

How much does this product help to save your time?

We asked the participants to rate how much this machine will help to save their time in cooking, with a scale from 1 to 5.

SCORE **4**/5

"Makes a difference in saving time."

SCORE **3**/5

"It doesn't really help to save time."

SCORE **4**/5 OR **1**/5

"Scores 4 for new recipe, scores 1 for recipes that I already know."

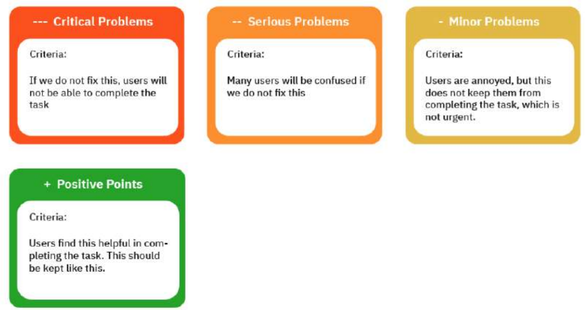
2.2.4 Problem clusters

The insights gained through the interview and observations were clustered into 6 groups. The clusters were split into the severity of the problem (critical, serious and minor) or positive points about the concept. The rating took place after discussing the possible impact on the usability, if this issue would not be resolved.

6 Clusters of Problems

- **Unnoticeable indication:** The affordances of product cannot be recognised.
- **Confusing indication:** The affordances of the product makes the user confused.
- **Unclear meaning:** The content (eg. text, icon) is unclear.
- **No feedback:** There is no feedback after user's input.
- **Online prototype limitation:** The problem is caused by the online protype platform.

Severity of the Problems and Their Criteria



4.2.5 task completion

The table indicates the participants' success in completing the tasks. We divided the success into 3 levels.

- **Perfect Success:** Participants manage to complete the step without any mistakes and trials.
- **Just so-so success:** Participants complete the step with some mistakes and irrelevant trails.
- **Fail:** Participants fail to complete the step.

The clusters and the severity of the problems are along with the just so-so success and fail in this table(figure 4-7). The purpose of this table is to give an overview and measure the difficulties when participants went through the steps.

Figure 4-7: The table of task completion situation and the problems analysis

As the table shows, most of the steps were successfully finished by the participants, except for step 6: change thee parameters and press the dial. The participants felt confused and didn't notice the clickable icons such as temperature, speed on the interface. Besides, the explanatory text is too small and too long for them to read when operating the machine. Other problems and detail of the insights can be found on the next page.

4.2.6 Insights Mapping - Digital Part

In this part, we analyzed the advantages and problems in the redesigned interfaces based on participants' behaviors and comments from step to step(figure 4-9).

It is worth mentioning that three of the screens are not included in the test plan due to the time limitation. However, some of our participants saw those interfaces during their exploration and had comments on them, which were also put in this part(figure 4-8).

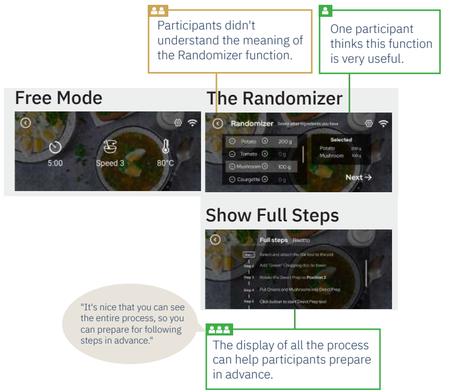


Figure 4-8: Screens that are not included in the test plan.

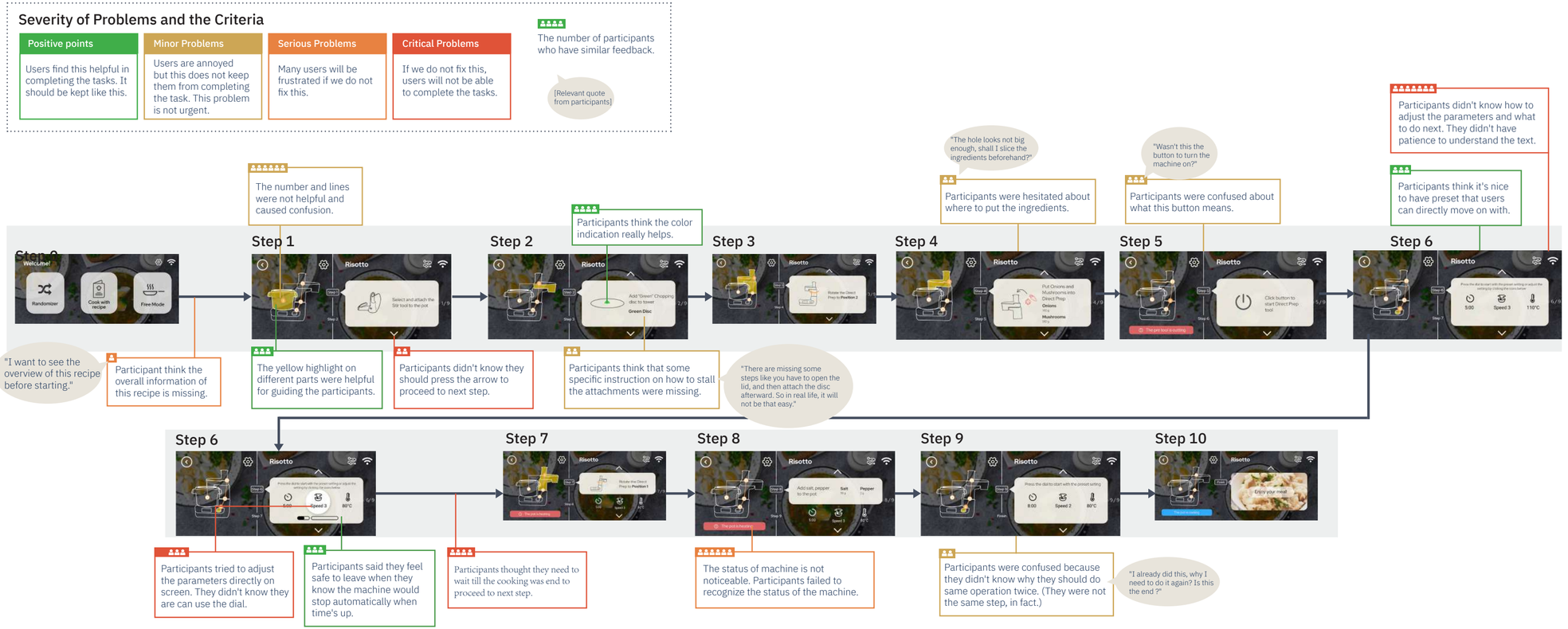


Figure 4-9: Insights during the test from step to step.

4.2.6 Insights Mapping - Physical Part

In this part, the insights gained from the user tests are mapped out on basis of the different components of the physical product. This led to suggestions for improving the concept.

Evaluation on Main Redesign Scale

Our redesign of the physical part mainly focuses on the appearance, light string indication, and colour codes on attachments, which are evaluated in the first part.

Aesthetics

- Most of our participants have positive feedback on the product's appearance.

"The aesthetics look nice and intriguing, the color combination is beautiful."

"The product design makes me feel young and compact."

"I like the wood and dark colour."

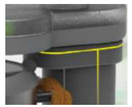
Color Code

- The color code on the discs was useful in helping users recognize the right disc.

"I like their appearance and they are useful."

"The color indication really helps."

Light String



- The light string was not very noticeable during the test, **which might be caused by the way we presented the prototype.**

"I didn't see it because I mainly focused on the screen, which is on the other side (in this online prototype.)"

- When the participants realize the existence of the light string, it's meaning is understandable for them.

"It is easy to understand cause it's similar to the induction cooker."

"The light string adds something to the aesthetic. And it makes the waiting less annoying."

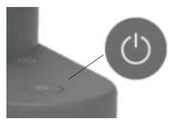
Feedback on the Other Part

In the second part , other insights on the physical product are shown based on participants' comments.

Tower On/Off Button

- The tower button has been mistaken by many participants as the on/off button for the whole machine, though it didn't influence their completion of the task.

"I didn't know it was just for the tower. But maybe it's more understandable if I saw the three buttons at the same time (the dial, the master on/off button, the tower on/off button)."



Dial

- Participants were confused about how the dial and the touch panel cooperate together. **This might also have something to do with the online platform, since affordances are missing.**

Behavior: Only one participants finish step 6 (adjust the parameters and press the dial to confirm) with perfect success.

"Why you designed a touch screen with dial. I am wondering why can't I just adjust everything on the touch panel and it's all good."

"The instruction on the screen is confusing. Would be better if you change it into 'change the parameter and press the dial'. "

Display

- Participants think the interface is too small for the amount of information given.

Behavior: We noticed during the test that many participants find it hard to read the text or don't have patience to read them.

4.4 CONCLUSION CHAPTER 4

Our redesign concept mainly focuses on helping mothers save time while cooking by providing them with more use cues and guidance during the cooking process. Since we can not directly measure the time-saving characteristic due to the limitations of the prototype, we set up our research question based on our 3 sub-goals:

Do the participants feel guided, in control, and comfortable while using the redesigned product of the CookEasy+?

Seven user test showed how the redesign contributed to the named research question.

Feeling guided:

Participants were able to finish most of the tasks successfully. Most participants of the user tests described their experience of using the product as very clear and easy to follow. The highlight on the overview of the product on the screen and the color code of the disks guide the user most, according to the participants. It can be concluded that the new flow on the interface and the color codes will make the user of the redesigned cooking machine feel guided.

Feeling in control:

It can be concluded that in this first redesign, the goal of feeling in control while using the product is partly reached. In the interview, the participants said the timer on the interface made them feel safe to leave the machine and the overview of the whole process was considered helpful in saving time by the participants. Though, the status of the machine, when it was hot for instance, was not noticeable enough for users to recognize and needs improvements for safety issues.

Feeling comfortable:

The comfortable part, in our definition, mainly focuses on the ergonomics factors, which can not be sensed in a good manner by the participants in our online testing environment. The participants were positive about the pot handles and unlock lid device but in order to give a correct answer to this question, further evaluation is needed.

The part of asking the participants to rate time saving with this cooking machine is hard, because among reasons mentioned earlier, every recipe has different preparation and cooking time.

Still, the participants were asked to rate how much time they think the redesign would save while cooking and give an explanation. Five of the in total seven participants gave a score of 4 out of 5 (1= not saving time at all, 5= saving a lot of time) and think the recipe guidance, the direct prep tool and the automated cooking process would make a difference in saving their time. Because these elements seems to contribute to saving time while cooking, these will stay in the redesign.

Further improvements would be applied in next chapters based on the feedback.

CHAPTER 5
FINAL REDESIGN

After finishing the user tests and data analysis, three issues towards the physical product, and four interface issues that needed refinement were discovered.

The physical parts and interface are sequentially introduced with an overview and features. This chapter elaborated on the details of the final redesign with the reasons.

5.1 DESIGN IMPROVEMENT OF PRODUCT

Figure 5-1: Product refinement

5.2 DESIGN IMPROVEMENT OF INTERFACE

After testing, several problems in the interface were discovered and clustered based on its severity. During user testing, the tasks assigned to users, mainly focused on the function of “cook with recipe”. The severity was given to the task: changing the parameter, which most of the users failed to recognize the clickable icon at the first time. So, in our final design, a circle will present as default to indicate the active icon and also we minimized and accurated the text to increase readability. Besides, on the left part of the screen, we leave out the order number of the component which caused confusion in our test. The status of the machine is also be more explicit based on the finding from interviews.

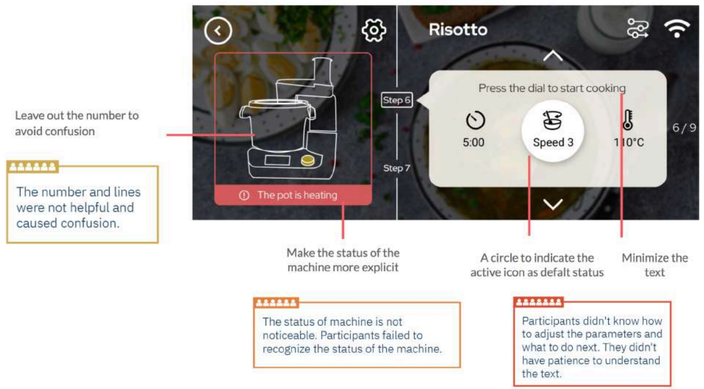


Figure 5-2: Interface refinement

CHAPTER 6
FINAL STATEMENT

In this chapter, we will give a conclusion on how we came to our redesign based on the insights from our test. Also, we will take the business world into consideration and give our design advice based on our insights in this project.

6.1 CONCLUSION OF THE PROJECT

Our design goal is to help the user to save time on cooking so that they have more time to spend with their family. Letting the user feel guided and in control while using the product, were key aspects to achieve this. Our redesign is inspired by the metaphor of the subway, which gives an overview of the whole routine and clearly indicates the current step.

Based on this metaphor, for the physical part, we applied light strings to lead the user and indicate the current component should be focused on, and for the digital part, we combine the recipe to the screen and provide step-by-step instruction. The left side of the screen gives an overview and highlight of the product to help the user easily to understand the current component should be focused on. Besides, the color code on the disc is to help the user clearly find the right disc. These design interventions were highly praised by the participant during the test.

However, the participants also indicated that the information may be too much on the screen and some text and icons could be more accurate. And also, due to the online test limitation, the light string sometimes failed to be noticed by the participant and since the screen size is not as the reality, some of the feedback on the screen size may need further discussion.

6.2 STRATEGIC ADVICE

During the test interview, participants stated that the ways of indicating the components which should be currently focused are helpful and efficiently guided through the process.

Although applying the light strings on the products may increase the cost, the idea of showing the parts should be focused can be taken into consideration in the real business world.

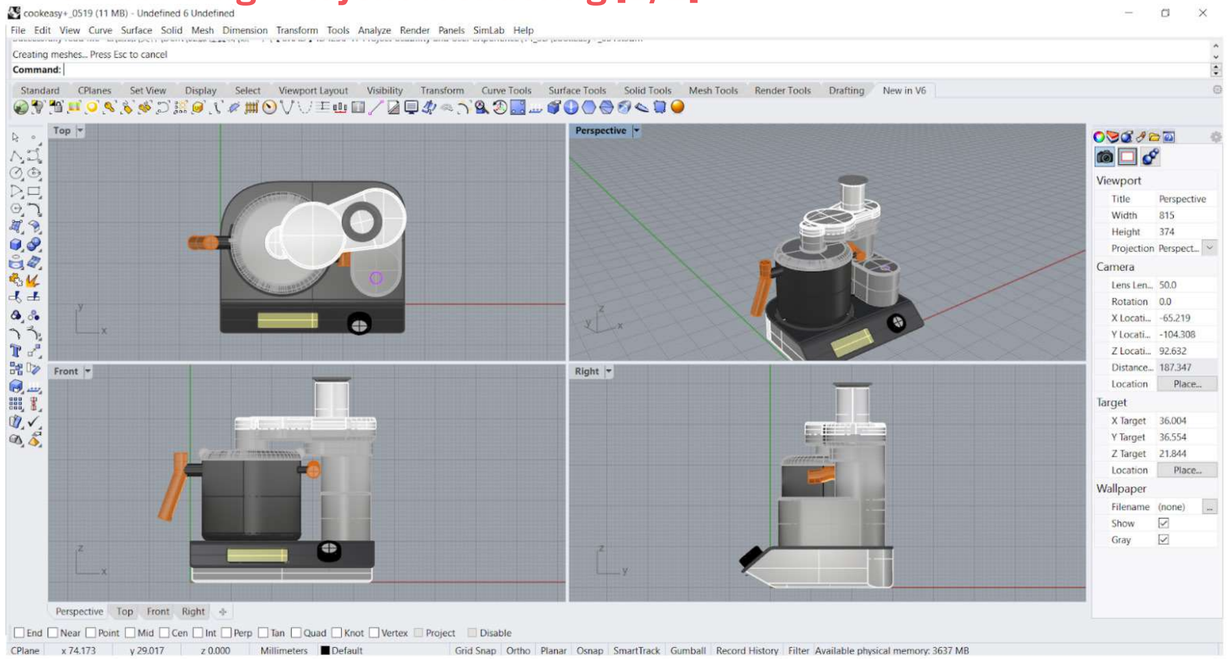
Besides, following step-by-step and combing the recipe to the screen were highly praised by the participants which make them feel guided and save their time on looking up the recipe between phone and machine.

APPENDIX

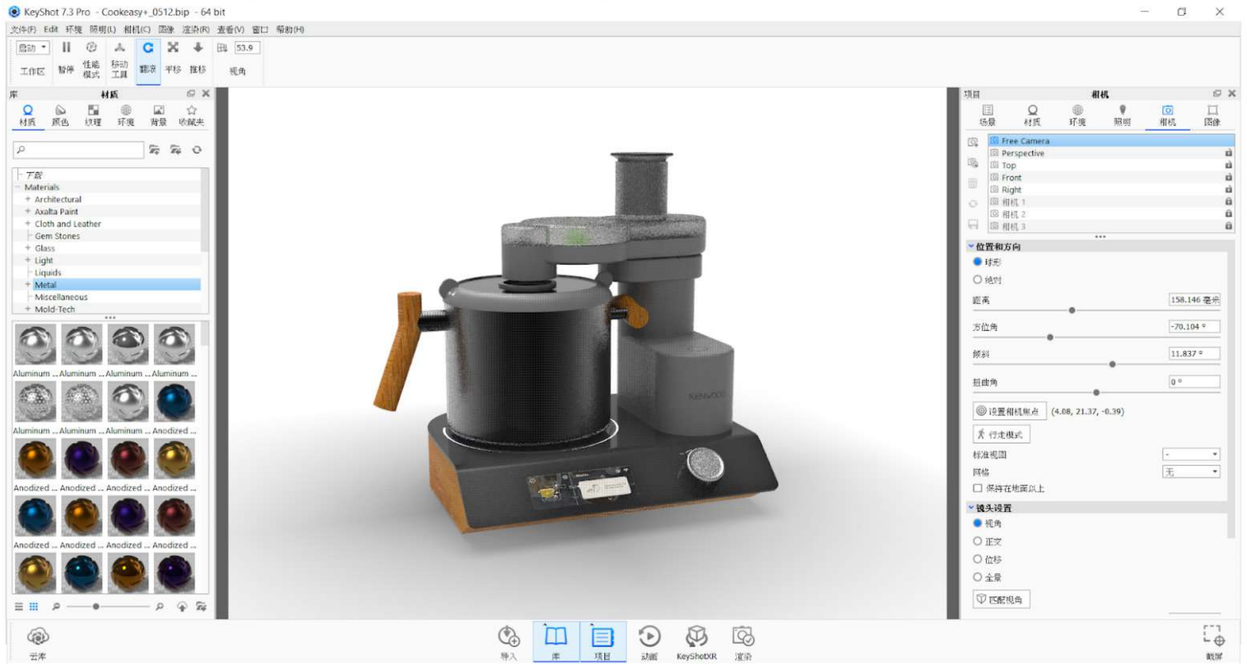
APPENDIX LIST

1. 3D building + keyshot rendering
2. Adobe XD + Figma process
3. Test protocal (for ourselves)
4. Participant consent form
5. Test introduction for participants
6. Quantitative research: Google survey
7. Quantitative questions setting
8. Raw data analysis (Observation)
9. Raw data analysis (Interview)

APPENDIX 1.
3D building + keyshot rendering [1/2]



APPENDIX 1.
3D building + keyshot rendering [2/2]



APPENDIX 2.
Flowchart interface first redesign [1/2]

APPENDIX 2.
Flowchart interface first redesign [2/2]

APPENDIX 3.
Test Protocol (for ourselves) [1/4]

Prototype link:
https://xd.adobe.com/view/f810453d-822b-4e30-5b8a-2f2ee7057366-8e21/

Recruit participants

- Recruit **1~ 2 participants** each. A parent who has kids. A parent who has kids that don't live together with them is a good alternative. We will ask them to imagine the situation in which their kids were still young.
- When asking somebody: *make sure that she is OK with sharing their laptop screen and meeting at ZOOM or Skype at the same moment.*
  Should be mentioned in the document we show to the participants

Tips beforehand for the one who conducts the test
Make sure the participant is okay with sharing their screen and recording it. Explain to them why this is needed for us.

Make sure the participant feels comfortable with you, and understands what is going on. Therefore it is important to regularly check how the participant is doing (do you see the link to the prototype? Do you see the prototype? Can you share your screen, do you know how to do that? Etc.). Also, use the participants' names to let them feel more comfortable.

Ask the participant to think out loud. Ensure them that there are no right or wrong questions or answers, they can take their time and if something is unclear, they should ask for clarification!

Make sure the participant has their screen full screen when testing the prototype!

Show your hospitality.

The user test may last approximately 30 mins and includes 3 parts:

- Introduction (<5 mins)
- Testing (<10 mins)
- Evaluation activities (<20 mins)

APPENDIX 3.
Test Protocol (for ourselves) [2/4]

1. Content Form for the participant

https://docs.google.com/document/d/1DYN7tLjEWatfNfbNT0Khnv8G08J7CqWrjG-sgUXBm5U/edit?usp=sharing

2. Introduction (<5 mins)

- An informal chat with the participant to make them feel comfortable.
- Show them the pdf (by sharing screen) so they can read the permission form and introduction of the product themselves (so we ask: can you read it right now, we will be quiet for a minute, ask them to tell when they finished reading). Explain the set-up of the prototype and set the scene. "Imagine you come home from a long day at work. Your kids are already home and your partner is on their way. You will cook dinner for your family. For this you have the Kenwood CookEasy+ in your kitchen. A product that helps you to cook more easily and faster... blablabla... To test the product, we made this prototype (add an extra slide in the prototype?? as intro?). With your cursor you can interact with the product. You are able to move the product parts and you can interact with the screen. etc.. etc.."
- Ask if the participant has any questions about the introduction.
- Ask: please share your screen and open the 3D model, move and play with it. After a minute, we provide the link of the test (send it via the chat) and ask to start

3. Testing (<10min)

While testing the observer should fill in the Note-taking Form 1 and take notes:
(please remember to fill in the participant number)

- 
  Note-taking Form 1: Observation

  Observer: Participant number:

Task	Success of complete the test					
	Perfect Success		Just Do-Do Success		Fail	
Select cook with recipe mode		Remarks:		Remarks:		Remarks:
Attach drill bit	Perfect Success	Remarks:	Just Do-Do Success	Remarks:	Fail	Remarks:
Add cutting disk	Perfect Success	Remarks:	Just Do-Do Success	Remarks:	Fail	Remarks:
Slice onion and mushroom	Perfect Success	Remarks:	Just Do-Do Success	Remarks:	Fail	Remarks:
Take onion and mushroom	Perfect Success	Remarks:	Just Do-Do Success	Remarks:	Fail	Remarks:
Add stick, soft, potato	Perfect Success	Remarks:	Just Do-Do Success	Remarks:	Fail	Remarks:
Cook for a while	Perfect Success	Remarks:	Just Do-Do Success	Remarks:	Fail	Remarks:

  Excel version:
  https://docs.google.com/spreadsheets/d/168MQAr_jIpF7SuL9m6JStjQ8pwS7mB0XYYvX2cFkdaM/edit?usp=sharing

  PDF version:
  https://drive.google.com/open?id=1aj3kffJ5k0Ut_sOkPsD4LpnzWHP_BctS

APPENDIX 3.
Test Protocol (for ourselves) [3/4]

4. Evaluation activities at the end (<20mins)

1. SUS Questionnaire (<5 mins)

First to let the participant fill in the SUS Questionnaire:

(Please only be filled in by the participant because the results will be recorded)

https://docs.google.com/forms/d/e/1FAIpQLSd5ysv7xiiA-BGuMRedCFWwTXNLLj2IoBfISW8zWDy3sHNprw/viewform?usp=sf_link

When the results are gathered:

- The best way to interpret your results involves “normalizing” the scores to produce a percentile ranking.
- The participant’s scores for each question are converted to a new number, added together and then multiplied by 2.5 to convert the original scores of 0-40 to 0-100. Though the scores are 0-100, these are not percentages and should be considered only in terms of their percentile ranking.
- Based on research, a SUS score above a 68 would be considered above average and anything below 68 is below average.

SUS Score	Letter Grade	Adjective Rating
Above 80.3	A	Exellect
Between 68 and 80.3	B	Good
68	C	OK
Between 51 and 67	D	Poor
Below 51	F	Awful

2. Interview (<15 mins)

While testing the observer should fill in the **Note-taking Form 2** and take notes:

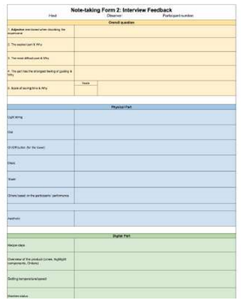
(please remember to fill in the participant number)

Excel version:

https://docs.google.com/spreadsheets/d/168MQAr_jIpF7SuL9m6JStjQ8pwS7mB0XYYvX2cFkdaM/edit?usp=sharing

PDF version:

https://drive.google.com/open?id=1EStelMCu68aYFSktawK5LA5PTFZzDUXu



APPENDIX 3.
Test Protocol (for ourselves) [4/4]

Overall questions:

1. Could you describe the experience you had with the machine? (Open-ended question on positive and negative feelings)
2. What did you find the easiest part? Why?
3. What did you find the most difficult part? Why?
4. Which part do you think has strongly guided you through cooking? Why or why not?
5. For our design goal: Compared to your current cooking experience, how likely do you think the Cookeasy+ can save your cooking time? （scale 1～5）Why?

   (The limitation should be mentioned in the report that we cannot compare the test prototype and current product due to the situation)

Physical parts:

1. Did you have any comments on the information provided by the machine?
   - Light string
   - Dial
   - On/Off button (for the tower)
   - Disc
   - Tower
   - Others based on the participants’ performance
2. What do you think of the look of the product?

Screen parts:

1. Did you have any comments on the information provided by the screen?
   - Recipe steps
   - Overview of the product (Lines, highlight components, Orders)
   - Setting temperature/speed
   - Machine status
   - Buttons & icons on the screen
   - Others based on the participants’ performance

If you look back at the prototype now, do you want to add any comments?

3. Screen record

1. Screenshot for the key insights & problems
2. Success completion of **each** task
   - Perfect Success: Manage to complete the task without any mistakes and trials
   - Just so-so Success: Complete the task with some mistakes and irrelevant trails
   - Fail: Fail to complete the task
3. Errors & Trials
   - What error did the participant make during the process?
   - What trials or doubts did participants have during the process?

APPENDIX 4.
Participant consent form

Redesign of Kenwood CookEasy+

Consent to take part in research

- I…… voluntarily agree to participate in this research study.
- I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.
- I understand that I can withdraw permission to use data from my interview within two weeks after the interview, in which case the material will be deleted.
- I have had the purpose and nature of the study explained to me in writing and I have had the opportunity to ask questions about the study.
- I understand that participation involves trying one mockups of a food processor, and giving feedback about my experience. Videos and audios of the process will be recorded.
- I understand that I will not benefit directly from participating in this research.
- I agree to my interview being audio-recorded.
- I understand that all information I provide for this study will be treated confidentially.
- I understand that in any report on the results of this research my identity will remain anonymous. This will be done by changing my name and disguising any details of my interview which may reveal my identity or the identity of people I speak about.
- I understand that disguised extracts from my interview may be quoted in reports and presentations for TU Delft.
- I understand that if I inform the researcher that myself or someone else is at risk of harm they may have to report this to the relevant authorities - they will discuss this with me first but may be required to report with or without my permission.
- I understand that signed consent forms and original audio recordings will be retained in TU Delft and Google drive until 2022
- I understand that a transcript of my interview in which all identifying information has been removed will be retained for students this will be two years from the date of the exam board.
- I understand that under freedom of information legalisation I am entitled to access the information I have provided at any time while it is in storage as specified above.
- I understand that I am free to contact any of the people involved in the research to seek further clarification and information.

Names, degrees, affiliations and contact details of researchers (and academic supervisors when relevant).

Signature of research participant

---------- ----------
Signature of participant Date

Signature of researcher

I believe the participant is giving informed consent to participate in this study

---------- ----------
Signature of researcher Date

APPENDIX 5.
Test introduction for participants [1/3]

Prototype testing may 2020

Diede van Malssen
Guo Peicheng
Chia-ying Hong
Zeng Wei
Marjolein Keuzenkamp

TU Delft

APPENDIX 5.
Test introduction for participants [2/3]

Introduction
We as a team of 5 design students, are redesigning a cooking machine of Kenwood. We are designing for parents in a ***family with a partner and kids*** that still live at home. Today we are going to test the usability of the product and the digital screen on the product.

The **CookEasy+** is a multifunctional cooking machine that helps you cook more easily and faster. The machine consists of a base with a cooking pot and the direct prep tool to cut vegetables on top of it.

The direct prep tool can be positioned in two ways: one way the choped food falls straight in the pot, for the other position chopped food can be collected in a external bowl or plate.

The product comes along with all kinds of elements that automate parts of the cooking routine: stirring, kneading, slicing or chopping food.

Scenario
Imagine you come home from a long day at work. Your kids are already home and your partner is on his/her way. You will cook dinner for them and use the Kenwood CookEasy+ in your kitchen. You found a recipe to make a risotto. In the test you will go through 9 steps to make this dish.

Limitations
Due to the digital prototype there are some limitations:
- Rotating the direct prep tool requires pressing a button while turning. This is not possible to conduct in our test.
- The interaction between the elements and the machine is only possible in one (the correct) way.
- The light on the product is hard to mimic (yellow and orange lines)
- It is more difficult to get a feeling how large the product (also the screen) is and how comfortable it is to use the product

Prototype
We made a prototype of our redesign that can be played with in the PDF file. You can rotate it to see the shape in 3 dimensions and zoom in and out.

For the test, this prototype is put in an interactive environment. You are able to move the elements on the left and right side of the products and you can interact with the screen.

We want to ask you to talk out loud. There are no wrong answers.

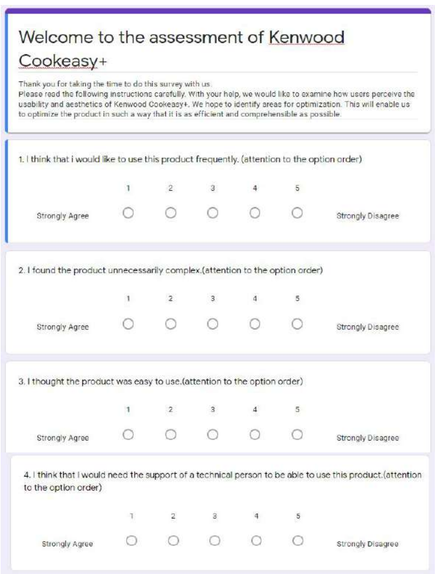
Questions
Afterwards we have some questions for you prepared. We want to ask you to fill in a questionnaire.

Thank you so much for helping us!
Diede van Malssen, Guo, Chia-ying, Wei and Marjolein Keuzenkamp

Meet our team

APPENDIX 5.
Test introduction for participants [3/3]

APPENDIX 6.
Quantitative research: System Usability Scale (SUS)



Welcome to the assessment of Kenwood Cookeasy+

Thank you for taking the time to do this survey with us.
Please read the following instructions carefully. With your help, we would like to examine how users perceive the usability and aesthetics of Kenwood Cookeasy+. We hope to identify areas for optimization. This will enable us to optimize the product in such a way that it is as efficient and comprehensible as possible.

1. I think that I would like to use this product frequently. (attention to the option order)

Strongly Agree 1 2 3 4 5 Strongly Disagree

2. I found the product unnecessarily complex.(attention to the option order)

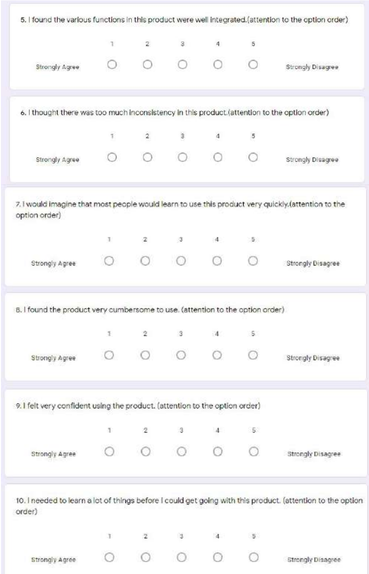
Strongly Agree 1 2 3 4 5 Strongly Disagree

3. I thought the product was easy to use.(attention to the option order)

Strongly Agree 1 2 3 4 5 Strongly Disagree

4. I think that I would need the support of a technical person to be able to use this product.(attention to the option order)

Strongly Agree 1 2 3 4 5 Strongly Disagree



5. I found the various functions in this product were well integrated.(attention to the option order)

Strongly Agree 1 2 3 4 5 Strongly Disagree

6. I thought there was too much inconsistency in this product.(attention to the option order)

Strongly Agree 1 2 3 4 5 Strongly Disagree

7. I would imagine that most people would learn to use this product very quickly.(attention to the option order)

Strongly Agree 1 2 3 4 5 Strongly Disagree

8. I found the product very cumbersome to use. (attention to the option order)

Strongly Agree 1 2 3 4 5 Strongly Disagree

9. I felt very confident using the product. (attention to the option order)

Strongly Agree 1 2 3 4 5 Strongly Disagree

10. I needed to learn a lot of things before I could get going with this product. (attention to the option order)

Strongly Agree 1 2 3 4 5 Strongly Disagree

APPENDIX 7.
Qualitative questions setting

Overall questions:

1. Could you describe the experience you had with the machine? (Open-ended question on positive and negative feelings)
2. What did you find the easiest part? Why?
3. What did you find the most difficult part? Why?
4. Which part do you think has strongly guided you through cooking? Why or why not?
5. For our design goal: Compared to your current cooking experience, how likely do you think the Cookeasy+ can save your cooking time? （scale 1～5）Why?
   (The limitation should be mentioned in the report that we cannot compare the test prototype and current product due to the situation)

Physical parts:

1. Did you have any comments on the information provided by the machine?
   - Light string
   - Dial
   - On/Off button (for the tower)
   - Disc
   - Tower
   - Others based on the participants' performance
2. What do you think of the look of the product?

Screen parts:

1. Did you have any comments on the information provided by the screen?
   - Recipe steps
   - Overview of the product (Lines, highlight components, Orders)
   - Setting temperature/speed
   - Machine status
   - Buttons & icons on the screen
   - Others based on the participants' performance

If you look back at the prototype now, do you want to add any comments?

3. Screen record

1. Screenshot for the key insights & problems
2. Success completion of **each** task
   - Perfect Success: Manage to complete the task without any mistakes and trials
   - Just so-so Success: Complete the task with some mistakes and irrelevant trails
   - Fail: Fail to complete the task
3. Errors & Trials
   - What error did the participant make during the process?
   - What trials or doubts did participants have during the process?

APPENDIX 8.
Raw data analysis (Observation) [1/4]

Note-taking Form 1: Observation

Task	Success of complete the task					
	Perfect Success		Just So-So Success		Fail	
Step 0: Select cook with recipe mode	P1		P3	First she wanted to use the randomizer. She asked whether she should use that one. After that she went straight to the 'recipe' option		
	P2					
	P4	Knew this was the right one but first checked the randomizer function. Both clear.				
	P5					
	P6	Not sure what Randomizer is				
	P7					
	Perfect Success		Just So-So Success		Fail	
Step 1: Attach stir tool	P1	She mentioned before using this, there should be at least telling you how to "attach" this. For example, in real life, you would hav no idea that whether I should rotate it in what direction, then I can attach it correctly. So she advised that maybe there can be a "info" teach you how to attach it. Or you can design a tutorial video for user to learn that beforehand.	P3	She tried a few different things, but then it worked. (Prototype limitation)	P4	Thought for a sec that the pot was the stir tool. Then she recognized the icon and understood what to do. Also struggled with the prototype: clicked on the elements instead of dragging. Later on she understood.
	P2		P5	Not sure about how to go to the next step of the recipe	P6	"Why don't let me see the overview first?" Don't know how to attach(limitation of online test). When finishing operation, didn't press the button to proceed to next step.
	P7					

APPENDIX 8.
Raw data analysis (Observation) [2/4]

	Perfect Success		Just So-So Success		Fail	
Step 2: Add cutting disk	P1	She mentioned in this part, there are missing some steps like you have to open the lid, and then attach the disc afterward. So in real life, it will not that easy. So under this circumstance, there whould design a safty lock for opening the lid in case kids can open it.				
	P2					
	P3	Perfect, went right straight away				
	P4	Perfect in one time				
	P5					
	P6	Thought that was the cover (instead of discs)				
	Perfect Success		Just So-So Success		Fail	
Step 3: Rotate Direct prep to P2	P7	No remark	P4	I already did this?' Then she just rotated it. 'Well, ok'		
	P3	Perfect, went right straight away				
	Perfect Success		Just So-So Success		Fail	
Step 4: Put onions and Mushrooms in direct prep tool	P1	No remarks	P7	No remark		
	P2					
	P3	Perfect, immediately to the right place and pressed the right button. "Do I really have to wait now for three minutes??" The text in the screen is really small... She had to put her glasses on to be able to read it.				
	P4	Perfect in one time				
	P5					
	P6	Feeling confused: These are carrot and onions(on the pictogram) instead of mushroom and onions.				

APPENDIX 8.
Raw data analysis (Observation) [3/4]

	Perfect Success		Just So-So Success		Fail	
Step 5: Click button to start Direct Prep tool	P7					
	P3	Went very naturally				
	P4	But hard to see, participant clicked on the cooking machine itself				
	Perfect Success		Just So-So Success		Fail	
Step 6: Change parameters and press dial			P1	She didn't notice that she needed to adjust that	P4	I cant change the settings on the screen? Why cant I confirm on the screen instead of using the dial? But maybe this is also confusing because it is a digital prototype
			P3	Clicked on the different presets, tried to change the settings on the touch screen, but that didn't work. She thought she could just continue with the recipe by clicking the arrow to below, but that didn't work! Then after asking if she knew other ways, she tried to press on the screen on the product itselft (on the left part of the screen). After looking well at the product, she thought maybe you can change the settings with the dial: "Can you adjust it?" // She wanted to change settings, went quite natural. She couldn't proceed to the next step though: "I assume you see what's happening on the display and that you can change it with the dial? That is pretty clear and simple."	P7	She mentioned that I don't understand the existance and the meaning of this three icons. And the interface doesn't imply me how to adjust them or when I can adjust them. I thought the interface design right now just imply these are all preset and I have no need to adjust it.
			P5	Not clear how to adjust the temperature	P2	She can't find the dial in the begining of this step. (because there are something wired bug happen before this step, she didn't finish the previous step then directly move to this step.) Then she don't realize she can adjust the parameters. She thought that all the setting are already preset.
	Perfect Success		Just So-So Success		Fail	
Step 7: Rotate direct prep tool to P1	P1	no remarks				
	P2					
	P3	She did it naturally				
	P4	Perfect in one time				
	P5					
	P6	no remarks				
	P7					

APPENDIX 8.
Raw data analysis (Observation) [4/4]

	Perfect Success		Just So-So Success		Fail	
Step 8: Add stock, salt, pepper	P1	no remarks	P2	She alerady add the salt, though and the process just direct move on to the next step. So participant is a bit confusing that she still wants to add the pepper but cannot do it anymore in the next step.		
	P3	Went straight to the right place. Turning of the tower also went well. She wants to turn the tower back again (which is fine..).	P7	What does this mean? Do I need to adjust the amout of pepper and salt?		
	P4	Perfect in one time but it took some time to find out fow to skip the cooking time				
	P5	Perfect in one time				
	P6	no remarks				
	Perfect Success		Just So-So Success		Fail	
Step 9: Press dial to start with preset settings	P3	Easy	P6	She thought that she already finished everything.	P4	I cant change the settings on the screen? Why cant I confirm on the screen instead of using the dial? But maybe this is also confusing because it is a digital prototype. So same struggles as step 6 but now ignores it and touches the dial
					P5	Tried to press the tower button instea
	Perfect Success		Just So-So Success		Fail	
Step 10: Finish the cooking	P1		P7	Did I finish the whole process?	P2	Remarks : Not sure should press the dial to the next step and she think the presetting 3 buttons (tempreture, time...) are unclickable
	P3				P6	Didn't press the dial to start cooking, didn't read the text, thought it was already the end
	P4	Then it is ready, what a breeze! Clear, yes.				
	P5	Prefer to have booking start function				

APPENDIX 9.
Raw data analysis (Interview) [1/5]

Note-taking Form 2: Interview Feedback

Overall question		
1. **Adjective** mentioned when discribing the expericene	P1	Looks nice, Convenient, Interesting, Achievement(when finish a dish)
	P2	Easy, but not sure how to taste the food after adding the seasoning, opening the lid will be inconvenient How to clean the machin seems to be tough
	P3	It is very clear. Of course it is different from seeing the product in real life, when you can look at it from different angles. Probably it would speak for itself then. I usually don't like having extra machines, I like to keep it as simple as possible in the kitchen. I do have a machine with an integrated cutting part, but I never use it. I think it's a big advantage that the vegetables go straight into the pot and therefore you don't need a lot of extra tools. It's also nice that it is electric, as we need to stop using gas. Also it is a big advantage that you don't need a kitchen to use this machine.
	P4	Clear. Elements were clear as well as the intructions.
	P5	Convenient, but still need to spend time to learn how to use at the first time
	P6	1. Hard to use (it's hard to understand if I don't know what it is like inside); 2. Not personalized, feeling too limited (instruction was too specific); 3. Multifunctional
	P7	It works well and smooth. The process is similar to the usual cooking. left-part of screen shows the whole product icon is clear and easy to identify what it is, and the recipe guiding on the right part are quite clear as well. The Product design is clear to tell its function, for instance, pot is pot and the direct prep tool is for cutting. The color on the disc is quite good.
2. The easiest part & Why	P1	The instruction on the screen was easy to follow
	P2	The way it helps chopping the ingredients is convenient
	P3	It's all the same level of easy. Easy that all tools are in one machine.
	P4	Add ingredients. Mainly peper and salt. You know these products. I have never seen these disks and tools that I need to attach but I know salt and peper.
	P5	The overview of the product and components in the screen guided each step make her feel easy to operate the product
	P6	Foolproof. Just need to follow the instruction without needing to know what is happening.
	P7	The whole process feels easy if I follow the guiding.

APPENDIX 9.
Raw data analysis (Interview) [2/5]

3. The most difficult part & Why	P1		Specific instruction for installation is needed.(Details on how to install it: open the lid, rotate?)
	P2		The function of the dial is unclear.
	P3		It was not difficult.
	P4		Adjusting the parameters. I would like to see: Adjust the parameters and press the button to confirm(text on the screen). But maybe this one was difficult because the prototype is digital. Also, I think you will learn it naturally when using the machine more often.
	P5		Cannot find the right disc (She didn't notice the colors of the disc by herself). The color of the disc (red & green) may still need to discuss because of the Red-green colour-blindness
	P6		Hard to recognize the function because I can not see the interior structure. For instance, the participant did not know what the prep tower is for.
	P7		Three icon is the most confusing part (adjusting the parameters). I cannnot understand whether it is just a recommendation for me to adjust, or it is already set for me.
4. The part has the strongest feeling of guiding & Why	P1		Details on the screen make me feel guided.
	P2		product overview on the screen
	P3		Most guiding was that I could see the next step on the screen. Lights? I don't see them! [we showed the lights on the product] Oh that looks very nice! The text on the screen is most guiding, however, the text is too small! There is a lot of information given on the screen, so it can be made a little bit bigger.
	P4		The screen. This is very useful. (We asked if she mentioned the lights on the physical part). I did see lights on the product but I don't know their purpose. I think it's double if you have the screen and the lights. I think that you will only need guidance during the first times you use the product.
	P5		The overview of the product and components in the screen guided each step make her feel easy to operate the product
	P6		1. The specific instruction did make the participant feel guided. 2. But she hopes to see the whole overview at the beginning before step 1 (time, all the steps, ingredients needed).
	P7		left-part of screen shows the whole product icon is clear and easy to identify what it is
5. Scale of saving time & Why	P1	Scale 4	1. The prep tower can save time for preparing ingredients. 2. Needs to feel safe to leave it alone (the participant was not sure if the machine would stop heating automatically).
	P2	Scale 4	It save the time when the recipe need to chop the ingredients into very small pieces, and it is efficient for stewing. The decision of whether using the products depends on what the recipe is being chosen.
	P3	Scale -	make a difference in saving time. However, this display will probably serve more people, because you use different ways of communication. The screen will be understandable for a larger group of people. Some people think in images, others in text.
	P4	Scale 60% time saving	I think this machine will save a lot of time. But still, you will have to prepare before getting started. It is not that you are following a recipe and then all at a sudden: 'Oh I need to add onions but I don't have them'. In this part you will not save time. Also I want a book with recipes that inspire me to use the machine.
	P5	Scale 4	Feel safe to leave and do the other things
	P6	Scale 4/1	4 if I don't know the recipe well, save my time to look into the recipe on my mobile phone. 1 if I know the recipe already, because it just helps me to slice and I need to spend time cleaning it.
	P7	Scale 3	It seems you need to take care of it during the cooking process. It dosen't really save time except cutting part. However, if you have to toss several time of ingredients in one dish, it doesn't truly save time.

APPENDIX 9.
Raw data analysis (Interview) [3/5]

Physical Part	
Light string	P1: Not noticeable. The participant thought it only indicates whether the machine is on or not. Think the function overlapped with the pictogram on the screen. P2: Didn't notice during the test, and she think the light is for indicating that there are ingredients in the pot or tower. P3: The user should be able to keep the product VERY clean, so there should be no chinks between the screen and the product itself and around the dial -> so no grease will come into the machine. [The product should be smooth]. The lightstrip seems practical. It reminds me of the traffic light that has a timer ticking away. You know when the food is almost ready. That makes the waiting less annoying. The light strip does add value, however it is not necessary. So if you should leave something out because the machine will become too expensive, you could leave that out. BUT IT IS VERY PRETTY and really adds something to the aestethics. P4: Maybe you don't need this since you have the screen that guides really good. P5: Didn't notice by herself, and cannot indicate its meaning because it is not eye-catching. Maybe some arrows point to the components which should be focus can make it clearer P6: not noticeable but understandable, because the screen is on other side (problem of the digital prototype). If I was standing, I might not see the light around the prep tower. P7: Participant didn't notice this in the first time using. But she found out that the light strip is for indicating the next step. The light with yellow and orange are quite intuitve for me to know what it represent.
Dial	P1: The participants knew she can press the dial because she has tried similar product. But she was not sure whether other users could know it as well. P2: The function of the dial is unclear, because she thought all the operation is on the screen P3: Nice confirmation to press the dial when you set the settings. P4: 'Adjust settings and press dial' would be better P5: clear P6: The interaction was not consistent with that of the screen (prefer adjusting just on the screen). Thought she could rotate it to turn on the fire (just like the dial for the stove) P7: Why you designed a touch screen with dial. I am wondering why I just adjust everything on the touch panel and it's all good.
On/Off button (for the tower)	P1: Thought that was for the whole machine. P2: clear （May be confused with the power button ） P3: Was very easy to use. P4: clear P5: clear P6: Thought that was the on/off button for everything, didn't know that is just for the prep tower. (But maybe it's understandable when 3 buttons are shown together) P7: I don't confused the meaning of on/off button now. Though I am not sure whether I will be confused this button may control the whole product instead of only control the direct prep tool when I see this product in person.
Discs	P1: More specific elaboration on installation is needed. P2: clear P3: Was very clear. P4: I like their apparance and they are usefull. P5: Didn't notice the different colors by herself. P6: no remarks P7: color indication really helps

APPENDIX 9.
Raw data analysis (Interview) [4/5]

Tower	P1: Was confused how to open the tower and where to put the discs.(Probably caused by the online form) P2: clear P3: It shall be different when operating this tower in real life. Now it was just one click. It might be harder to do it, give more resistance, when turning it in real life. P4: This is a bit difficult to use in a digital prototype but I think it will work fine. P5: clear, wish the entrance hole to be bigger P6: Feel unsafe to rotate it manually because there are blades inside. Hope it could automatically turn. P7: It seems you need to take care of it during the cooking process. It dosen't really save time except cutting part. However, if you have to toss several time of ingredients in one dish, it doesn't truly save time.
Others based on the participants' performance	P1: Feel confused about the location of the discs, because the entrance and exit are not on the same line. P2: clear P3: no remarks P4: no remarks P5: no remarks P6: no remarks P7: It seems direct prep tool is annoying with respect to cleaning. Also, it feels tired that you need to assemble and disassemble it everytime
Aesthetic	P1: Look nice, intriguing, beautiful color combination P2: None P3: P4: It is really beautiful. I love the wood and the dark colours. P5: Simplistic P6: Tower is too close to the pot, feel crowded and tense. It might be not convenient for me to reach the ingredients when the tower is at the right. The appearance is acceptable. P7: Product design makes me feel young, compact, though I know it might not really small. However, product with some weight and not too small can brings me a feeling that it is a reliable product instead of a toy.

APPENDIX 9.
Raw data analysis (Interview) [5/5]

Digital Part	
Recipe steps	P1: P2: clear P3: Went very natural and easy. P4: clear P5: clear P6: 1.Overall it's helpful. 2. But she felt too controled by the machine, and hope to have more freedom in how much ingredients to add. "Otherwise I don't gain sense of achievement when finishing a dish." P7:
Overview of the product (Lines, highlight components. Orders)	P1: Misunderstood the meaning of the number, thought it was the same as the step number P2: Not sure what the meaning of the number. During the test, the highlights are helpful P3: P4: Dont know what the added value is. Is the screen not enough? P5:Didn't notice by herself and she thought the higlight is indicating there are ingredient in the tower/pot. The lines are not understandable either. P6: 1. The highlight on different part: it's like guidance for beginners, not neccessary after using it multiple time because I know where to place the components. 2. The meaning of the step number was different with that on the right, it's confusing. And she did not know why the number was there. 3. The line between number has made her confused at first, so she don't look at it later. The highlight of different parts make her feel guided, while the lines between and the numbers are not very helpful. P7:
Setting temperature/speed	P1: Clear for her. Though she thinks user with less experience might need instruction to know they need to press the dial. P2: She thought the 3 option button (temperature, speed, time) cannot be changed P3: P4: A bit unclear. The words need to be different. P5: clear P6: 1. Prefer to operate directly on the screen(instead of using the dial). 2. She mentioned only "strong" "medium" "weak" level for her is enough, need not to be too accurate. P7: I feel that I need to adjust something when I saw those 3 icons, and I don't realise that these are already preset.
Machine status	P1: clear P2: Didn't notice them, but understood what they mean P3: P4: P5: Didn't notice neither status on the screen and the machine P6: 1. Meaning of the light stripe was understandable, she could recognize the orange light means the pot was heating. 2. The exclamation sign and red notification made her think she did something wrong. 3.Not enough feedback on the right side when it's cooking. The timer function is important while cooking, should be more outstanding. P7: The light with yellow and orange are quite intuitve for me to know what it represent.
Buttons & icons on the screen	P1: Wish the background to be simpler. The icon for the tower is misleading P2: The 3 option buttons (time, speed, temperature) seem unclickable. Didn't know the meaning of full-step button at the first time P3: P4: Icons are clear. Maybe it is hard to see on a small screen. P5: Most of them are clear, but not sure the meaning of full step, randomizer at the first time. Could be figure out after lookin at the instuction book P6: The notice of "the pot is heating" should be more outstanding than it is now, while the recipe name is not that important. P7: I feel that I need to adjust something when I saw those 3 icons, and I don't realise that these are already preset.
Others based on the participants' performance	P1: The participant appreciates the way we show the steps vertically. It was clear for her. P2: None P3: P4: P5: No remarks P6: In step7 the user thought she needs to wait for the cooking to finish to proceed to next step. But in fact, she needs to do it at the same time. P7: I don't think it is necessary to have a touch panel and dial at the same time especially since this is not a complex product.