

BSc Creative Technology

Food Swap

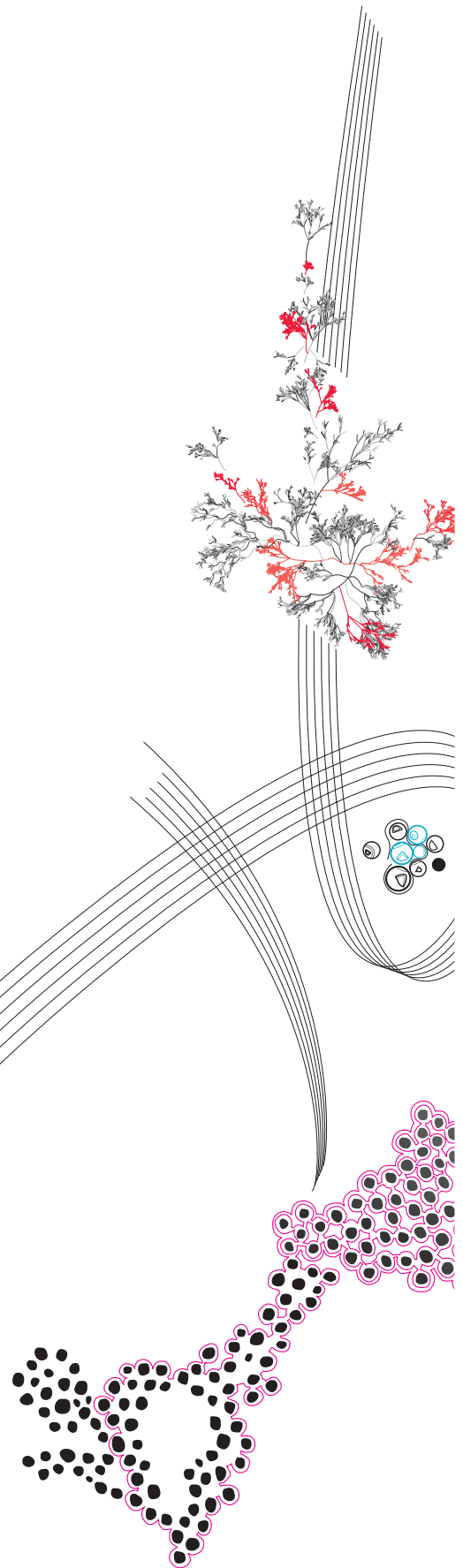
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Abstract

This bachelor thesis investigates in what way an interactive device can be designed for students to maintain motivation to keep making food swaps, which generates also social connectedness and support.

There is a growing issue of obesity in Europe and there are various diet plan which aims at helping individuals in getting a more balanced diet. The problem is that a lot of individuals struggle to maintain such a diet, and therefore it is not always effective.

Students often have the problem that they have less healthy food habits. Eating less vegetables and fruit and eating for convenience, not having enough time to properly prepare some healthy food. Furthermore, they experience less support from their peers for healthy eating, which does not help in the process of eating healthy.

Het Voedingscentrum, the Dutch Nutrition centre, came up with the idea of ‘de eetwissel’, ‘the food swap’. The idea is making small, easy and healthier food choices within a person’s daily day which can eventually lead to big impacts in the long term. This approach offers the possibility of achieving a healthier and more balanced diet without having to make drastic or difficult changes all at once.

The research question in this thesis aims on designing an interactive device that generates social connectedness and support among students to maintain making food swaps.

This problem will be investigated by first doing literature research and after, holding interviews with students and then brainstorming about many different tangible devices that could potentially help the students. The conclusion of the literature research and the first interview were that the device should have a few requirements; social connectedness/support, inspiration, motivation, goal-setting, and awareness. Social support and social connectedness are considered the most important requirements.

The ideas gotten from the brainstorming were evaluated with the help of the requirements and downsized. The evaluated ideas were again reviewed by the target group and again downsized and improved to five final concept ideas. The final five concepts were evaluated by the target group. The two ideas that came out best were the HouseCookbook and the LightCalendar. The most important elements which also these designs included were inspiration, social connectedness, social support, and motivation. A feeling of competition helped people also to get more motivation. All the mentioned elements can be implemented in various ways, there is not only one right way to implement those elements.

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Contents

1	Introduction	5
2	Background research	7
2.1	Literature research	7
2.1.1	What motivates people to maintain a healthier daily eating behaviour?	7
2.1.2	What are factors that contribute to unhealthy eating behaviour?	9
2.1.3	How to create social support and connectedness?	10
2.1.4	Summary	10
2.2	Target group	11
2.3	Stakeholders	12
2.4	Food Swap	12
2.5	State of the art	13
2.6	Peer interviews	16
2.7	Requirements	17
3	Ideation	19
3.1	Brainstorm	19
3.2	Downsizing	19
4	Evaluation	27
4.1	First interviews about the different ideas/concepts	27
4.1.1	Analyzing	27
4.2	Second round interviews about the five last concepts	42
4.2.1	Analyzing	42
4.2.2	Reflection on last five ideas	44
5	Discussion and future work	46
5.1	Limitations	48
5.2	Future work	48
6	Conclusion	50
A	Appendix	54

Chapter 1

Introduction

In the Western world, the health of the adolescent is increasingly getting worse. In Europe, obesity is now the most common health problem (Stevenson et al., 2007). There exist over 100 different diet plans that can help someone get a healthier lifestyle. There are many different types of diets, from weight loss to weight gain to sports diets, and cultural diets. Some examples are a low-carb diet, keto diet, fasting diet, and Mediterranean diet. A diet provides regulations on food and drinks that are consumed. Flexibility is not often acceptable. On average, individuals will try about 126 different diets during their lifetime (Headley, 2020). Dieting is generally not effective; a lot of people gain back more weight than they would lose starting with a diet (Mann et al., 2007).

Studies have shown that college students often have poor eating habits. They tend to eat less vegetables and fruits and have a higher intake of high-calorie foods and high-fat foods. Furthermore, students experience less support for eating healthy from fellow students which can also result in bad dietary habits. Additionally, students prioritize convenience when making food choices. This is one of the reasons why Het Voedingscentrum, the national Dutch nutrition centre, came up with the idea of ‘de eetwissel’, ‘the food swap’. The idea of the food swap is to make small, healthier food choices within a person’s daily eating behaviour which can lead to big impacts in the long term (Blijtjids, 2019). It is a tool that has to make it easier to maintain a balanced, healthier diet than a regular diet. A small change is easier to maintain and thus will become quicker a new habit. There is no need to cut out any food completely with the food swap. Examples of the food swap, swapping white bread for whole grain bread or from drinking soda to water (voedingscentrum, 2015).

Furthermore, dieting can be quite radical, suddenly cutting out certain foods all at once. Next, dieting is often done alone, which can be difficult, and it can be hard to keep up with the motivation to keep going with the diet. Working with other people can have motivational benefits. Talking with your fellow peers about a task that must be done can increase the performance of the task and your interest (Carr & Walton, 2014). The same applies when talking about dieting with fellow peers, this can increase the performance task. Furthermore, when having the feeling of being a part of a team can give more motivation to do a certain task (voedingscentrum, 2015). To get behavioural change, change in eating behaviour, motivational interviewing can be applied, motivational interviewing is an intervention used to get the desired behaviours and to increase motivation to help get the behaviour change (Martins & McNeil, 2009). When establishing healthy eating behaviours for students when they are attending university it could reduce risks such as obesity and other related nutrition problems (Blotnicky et al., 2015).

The research question is, in what way can an interactive device be designed to generate social connectedness and support by students to maintain making food swaps? To answer the research question, I will be answering the following sub-questions; What motivates peo-

ple to maintain healthier daily eating behaviours? What are the factors that contribute to unhealthy eating behaviour? and How to create social support and connectedness. To get more understanding of the food swap I will conduct an expert interview and to know the preferences of the target group, peer interviews. After, the state of the art will be discussed. Based on the interviews and literature research, I will establish requirements for the tangible device. Next, I will brainstorm for different concepts/ideas. These will be improved and students will be interviewed to gather their feedback. Finally, five different concepts will be selected and with a last round of interviews, the best idea will be selected. Finally, the results and future work will be discussed.

Chapter 2

Background research

This chapter discusses first the literature research and the state of the art. When having discussed the background literature the target group will be introduced. Lastly, the expert interview and peer interviews, and the requirements for the tangible device will be discussed. The literature research will be done by searching literature on Google Scholar, Scopus, and Science Direct. Keywords used are dieting, maintaining motivation, unhealthy eating behaviour, and group motivation.

2.1 Literature research

This chapter discusses first the literature research and the state of the art. When having discussed the background literature the target group will be introduced. Lastly, the expert interview and peer interviews, and the requirements for the tangible device will be discussed. The literature research will be done by searching literature on Google Scholar, Scopus, and Science Direct. Keywords used are dieting, maintaining motivation, unhealthy eating behaviour, and group motivation.

2.1.1 What motivates people to maintain a healthier daily eating behaviour?

Maintaining motivation to eat healthy can be a challenge, but there are multiple ways that can help with maintaining motivation. There is a technique that helps individuals get more motivation to maintain a healthier daily eating behaviour. An intervention that increases personal motivation toward behavioural change. This intervention is called motivational interviewing (Martins & McNeil, 2009; Teixeira et al., 2012). Motivational interviewing has two phases: in phase one, the intrinsic motivation for change is strengthened, and in phase two, the commitment to change is enhanced. The aim is to increase the individual's motivation to change from their own perspective. Motivational interviewing uses four basic principles: expression of empathy, development of discrepancy, rolling with resistance, and support of self-efficacy (Martins & McNeil, 2009). Additional motivational interviewing techniques that may succeed include shifting focus, reframing, coming alongside, overshooting, and emphasizing autonomy. These techniques aim to elicit arguments for change and reduce one's argument for not changing (Hardcastle et al., 2015). Overall, motivational interviewing has been found to have positive outcomes in the areas of dieting and weight loss (Martins & McNeil, 2009). By using motivational interviewing, individuals can increase their motivation to maintain healthier eating habits through different techniques and principles, resulting in their desired eating behavioural change.

Behaviour changes

Understanding the deeper motivation of people why they want to achieve a certain goal is essential to understand how to achieve a healthier lifestyle. Determining the quality of their motivation provides information on how to guide individuals in making behavioural eating changes (Teixeira et al., 2012). When determining what sort of changes individuals want to make, it is important to make easy guides to help individuals to improve their healthier changes (Young, 2014). There are different styles of behavioural regulation. Intrinsic and extrinsic motivation. Intrinsic motivation comes from within the individual, while extrinsic motivation is driven by a goal or reward (Pelletier et al., 2004). Goal setting can improve motivation and performance and therefore can help individuals reach their desired outcomes (Gómez-Miñambres, 2012). To change health behaviour, it is proven that having only the intention to change behaviour is not sufficient, goal setting is a way that can help achieve the goal. Mastery goals encourage problem-solving, and action plans are essential for goal setting and should be short-term and have frequent re-evaluations to provide feedback and modify the plan. Research shows that people who develop action plans are likely to increase success (Bailey, 2019). It is important to focus your goal on something that is important to the individual, a goal that is meaningful for you and provides something to continuously work toward. Process goals are often more achievable than result goals (Clear, 2021).

Social support is an important aspect which helps in the success of changing health habits. Individuals with supportive partners are more likely to enhance weight loss (Sallis et al., 1987). Talking and discussing about behaviour change can help people gain a better understanding of healthy living. Furthermore, it can be helpful to show how health behaviour contributes towards preventing or delaying injuries and/or diseases (Young, 2014).

Developing a new habit takes time, research shows that it takes around 66 days. It varies on the individual and their circumstances how long it will take precisely. It can vary from 18 to 254 days to form a new habit. Additionally, researchers found that making a mistake does not mean that the new habit will not be incorporated (Clear, 2021). Intrinsic and extrinsic motivation can increase the motivation of the individual for goal setting and personal motivation. Setting achievable goals, developing plans, and having social support are important factors in making successful behavioural eating changes.

Self-determination theory

The self-determination theory distinguishes between different types of motivation or reasons underlying behavioural engagement (Hardcastle et al., 2015). It integrates the motivation of humans with the role of social context and the role of the person. There are three key assumptions, individuals are proactive, tend to progress towards higher levels of psychological development and harmony, and the social context can hinder or support growth and integration (Verstuyf et al., 2012). The theory posits that motivation is context-dependent and that the environment plays a crucial role in shaping motivational change. Support from others can enhance the internal motivation of individuals toward various activities (Katz et al., 2015).

When individuals are being less self-determined they are more likely to be affected by pressure and social expectations, while being more self-determined leads to engaging in activities or goals that align with their own values and interest which lead to more need-satisfying experiences. Individuals' experiences that need satisfaction and need thwarting are linked to their eating behaviours.

Amotivation is according to the self-determination theory the state in which someone

lacks the intention to act. People who say they are amotivated toward health behaviours are not able to identify why they act a certain way and are more likely to have low intentions and poor health behaviour acceptance. The transtheoretical model identifies stages that characterize people on a continuum of change regarding health behaviour. Individuals who do not have a big interest in engaging in healthy behaviour and do not have the need for change are in the precontemplative. To improve effectiveness for unmotivated individuals, it is important to start by investigating what the underlying reasons are for not being motivated, being amotivated, or being precontemplative, when it comes to health behaviours (Hardcastle et al., 2015).

Many individuals believe that the cost of the behaviour is bigger than the benefits in the end, and individuals do not attach sufficient value to the changing behaviour. These are demotivating factors. Confidence-building strategies, aiming for decisional balance, also focusing on changing effort and value beliefs could help getting more motivation (Hardcastle et al., 2015). Motivational interviewing, which is described earlier in this chapter is well suited for unmotivated individuals as it is focused on building motivation for behavioural change.

To change individual eating behaviours, it may require some physical and/or psychological discomfort. Furthermore, many individuals might not be much motivated to regulate their eating behaviour. When trying to change eating patterns, most people are extrinsically motivated. Individuals tend to when changing eating habits to strive for a certain outcome, for example improving health (Verstuyf et al., 2012). Studies have shown that when individuals engage in tasks for autonomous reasons such as interest, fun, or value, the end results are better. When people do tasks for not-so-autonomous reasons, for example for others, they generally have fewer positive results (Katz et al., 2015). The self-determination theory and the transtheoretical model provide important information to understand motivation and behavioural change when wanting to increase motivation.

Dual process

The dual-process theories of action are an alternative viewpoint on changing health behaviours. According to this perspective, behaviour is driven by two processes. Conscious consideration of the pros and cons or expectations of the value of participating in the behaviour and non-conscious, spontaneous, and impulsive processes that occur without much thought (Hardcastle et al., 2015). Many unhealthy eating habits come from non-conscious processes, when letting conscious consideration override the non-conscious processes it requires cognitive resources and motivation (Hardcastle et al., 2015). It can be useful to structure individuals' environments as it is a factor that influences eating behaviour. When structuring the environment, it is possible to make it more difficult to make undesired behaviour choices rather than desired behaviour choices (Hardcastle et al., 2015). Research shows that food availability at home is one of the strongest correlations between fruit and vegetable intake among adolescents (Story et al., 2008). When having fruit and/or vegetables at home it could benefit the individual's healthy food consumption (Yang et al., 2013).

2.1.2 What are factors that contribute to unhealthy eating behaviour?

Individuals make food decisions throughout the day, often individuals are not fully aware of the choices being made. This is called mindless eating. It can occur in distracting daily environments, where individuals are not aware of how many decisions are being made which are influenced by the environment (Wansink & Sobal, 2007). This is a factor which may contribute to unhealthy eating behaviour. Furthermore, people often view healthy food as unsatisfying, boring, and not tasty. Additionally, insufficient time is also a factor

that influences unhealthy eating behaviour. Insufficient time leads to the consumption of quick and convenient fast-food options (Bisogni et al., 2012). People associate restriction and control with healthy eating, which is not necessarily true for healthy eating habits. Furthermore, controlling how much and/or the quality of food consumed can be difficult for individuals. Healthy eating often has a negative association among individuals. The influence of peers and family can also affect eating habits, social support plays a crucial role in dietary recommendations (Bisogni et al., 2012; Kalavana et al., 2010). New communities are frequently designed around unhealthy habits in today's world. Everywhere cheap fast-food restaurants are available (Young, 2014). For many individuals, regulating their eating behaviour is difficult, which leads to a lack of control over their food intake (Pelletier et al., 2004). Meaning that individuals fail at self-regulation. Interventions enhance the understanding of the importance of their dietary choices and what health impacts they have. The understanding of the importance of healthy eating behaviours may lead to changes in eating behaviour (Blotnick et al., 2015). Multiple factors contribute towards unhealthy eating behaviour, mindless eating, insufficient time, and the influence of friends and family. By raising awareness and understanding, individuals can gain control over their eating behaviour and have more self-regulation which will lead to healthier food choices.

2.1.3 How to create social support and connectedness?

When feeling related or connected with someone it can encourage health-promoting behaviour. Individuals are in large social domains and that relates to their health. It was found that when individuals have a low level of connectedness, their health behaviour was worse than those who had a higher level of connectedness (Yang et al., 2013). Furthermore, study shows that it is important to have a quantity of communication to get the feeling of connectedness or intimacy. When sharing personal information with others it increases the feeling of intimacy. Social environment, friends, family, peers, and other communities may impact food choices made by individuals through social support, and social norms (Story et al., 2008). If friends smoke or have unhealthy habits the chances are higher that you will also involve in those unhealthy activities (Yang et al., 2013). Meaning that social connectedness could help individuals with their eating habits (Vartanian & Hopkinson, 2010). It is possible to create social connectedness and support in various ways. For example, to invest more time and effort in sustaining relationships, and having regular interaction with friends. Furthermore, considering to become a member of a group that shares common interests or goals. Reaching out to people who can help during different times, also providing support to others (for Disease Control & Prevention, 2023). There are different kinds of social support. Emotional support, esteem support, informational support, and instrumental support. Emotional support can help an individual emotionally, which can include offering compassion or sympathy, giving comfort like hugs, and sharing and empathizing with the situations someone is in. Esteem support is the type that helps an individual feel more confident. With informational support, people share their experiences and give advice/information or resources. Lastly, instrumental support serves to help someone out (Estee, 2021).

2.1.4 Summary

Motivation is something which is important for maintaining healthy eating behaviour. Intrinsic motivation comes from within the individual and is an essential factor in maintaining healthy eating behaviours. Extrinsic motivation can also help, individuals are driven to achieve a certain goal and goal setting has been proven to increase motivation for the individuals. Individuals should be focusing both on intrinsic and extrinsic motivations to maintain healthy eating habits. Furthermore, motivational interviewing is a

technique which is also used to increase personal motivation, intrinsic motivation, and maintain healthy eating behaviours. With extrinsic motivation, the motivation is coming from the goal. Goal setting helps with improving the motivation of individuals. When having approach goals, it helps individuals to actually achieve those goals. What is important is that the goal is something that is important to the individual. When wanting to incorporate a new desired habit, it can take from 18 to 154 days. To help individuals with being motivated it can help to have social support.

The self-determination theory integrated the motivation of individuals in the role of social context and the role of the person. If individuals are more self-determined it leads eventually to more need-satisfying experiences, which is linked to eating behaviours. The environment is crucial in shaping motivational change, states the self-determination theory. It is important to have support, this will lead to the internal motivation of individuals will grow toward activities. When wanting to help unmotivated individuals, we should first investigate what the underlying reasons are for not being motivated to eat healthier. furthermore, there is dual-process theories of action, which are driven by two processes. it is important to override the non-conscious processes. It is possible to do this by making it more difficult to choose the undesired behaviour than the desired one. The Dutch nutrition centre, Voedingscentrum, created the food swap, which helps people maintain a healthier diet by making small, easy changes to their eating habits. This should be easier to sustain and motivate than a radical diet.

It is possible that individuals are not fully aware of the eating decisions they are making during the day, mindless eating. This can be one reason which helps with unhealthy eating. Some individuals think that with healthy eating comes strict restrictions, which not has to be necessarily true. Family and peers have an influence on eating behaviour, and social support and connectedness with others can help with healthy eating and an individual's health behaviour. Talking to others can increase the feeling of social connectedness and support and the social environment can impact eating choices.

2.2 Target group

The target group for this graduation project are students. Studies show that college students have often poor eating habits. Daily, students tend to eat less vegetables and fruits and have a higher intake of high-calorie foods and high-fat foods. When going to college, not living with your parents anymore worsens dietary habits among students. Later this can contribute to health issues (Deshpande et al., 2009). It can be difficult to go from living with parents to living in a student house or alone. Students can have issues with making their own meals and balancing their eating schedules with their new life and the costs of healthy food. Students experience less support from fellow students to eating healthy which can result in bad dietary habits. Fruit and vegetable intake from students is lower than the dietary recommendations. Eating unhealthily can come with poor health outcomes, weight gain, and chronic diseases. It can have long-term consequences for students (Kelly et al., 2013). There is a link between demographic and psychographic characteristics of the dietary behaviour of students. Where a student lives affects their dietary habits. Factors that can influence poor eating habits are stress, low self-esteem, and lack of knowledge about nutrition (Deshpande et al., 2009). It is observed that if students do not think it is necessary to improve their eating habits, they will not improve (Blotnick et al., 2015).

It is an important period of time for people between the ages of 18 and 25 to develop and establish eating and weight-related conditions (Tavolacci et al., 2015). This is why students benefit of the food swap, if they have healthy eating behaviours it will have an influence in the long-term time, they will establish healthy eating behaviours.

Context analyze

The target group of students has a couple of limitations. First students often do not have a lot of money to spend, so they will often choose one of the cheapest options. Second, students do not have a lot of time. Third, often students live in big houses, with roommates and do not always have the opportunity to cook for themselves and will thus not have the option of what to eat. The focus will be on students that live in big houses. When having the focus on big student houses it is possible that what will be investigated by them can after also be used for families. Student houses are somewhat like a family, just like families, they eat for example together almost every day.

2.3 Stakeholders

Primary stakeholders are crucial to the continued existence of an organization and continued existence of an organization does not rely on the secondary stakeholders, but they are also important to the organization (Matuleviciene & Stravinskiene, 2015). This means that Het Voedingscentrum is the secondary stakeholder and that the target group is the primary stakeholder. Without the target group, there could not be a continued existence of my project because it will be made for them. Without the secondary stakeholder, Het Voedingscentrum, the project can continue, but Het Voedingscentrum is still important because the idea is generated from Het Voedingscentrum.

2.4 Food Swap

An expert interview is conducted to gather more knowledge about the food swap, ‘de eetwissel’. The questions asked can be found in the appendix.

The interview took place online, through a Microsoft Teams meeting. This was done because the expert did not live nearby. Before starting the interview, the expert read the information letter and signed the consent form.

Firstly, I gave some background information about my research and my graduation project, and what it entails and asked if the expert had any questions beforehand. Next, I asked the expert the prepared questions about the food swap. Lastly, I asked if the expert had anything to add or if there was any question. When everything was said I thanked the expert for his time to hold this interview.

Summary of the interview

The food swap is a small step that people can make to swap some food that is not in the ‘Schaal van vijf’ for something which is in the ‘Schaal van vijf’, a scientifically substantiated model from the Dutch nutrition centre which shows the essentials for eating healthy. They want to show that you can be healthier and more sustainable in what you eat. The food swap is started because a diet can be quite radical and hard to follow, and in theory, small changes are much easier to make, which is what the food swap is doing. The food swap should help in the long term, it is on the long term more successful than a diet. It is difficult to say if the food swap is effective because ‘Het voedingscentrum’ does not have enough money to investigate this. What they do see is that the publicity is growing, it is something that is accessible for many people, and supermarkets are acknowledging this, they promote also the food swap based on ‘Het voedingscentrum’. The swaps are linked to the popular foods, they look at research from the Dutch National Institute for Public Health and the Environment. The swaps are put in different categories and the idea is that people can make also more swaps themselves which they did not write down. ‘Het voedingscentrum’ wants to have a broad audience, they want to include everyone from every background, which is why they, for example, have food swaps from more eastern

countries, like couscous.

Every food swap someone is making is automatically better than what they eat before. The goal is that the food swap they make will become their new normal. It has to become their habit to pick the swapped food instead of what they picked before. The goal is also that when having done one food swap people want to make more food swaps. To promote the food swap, they promote it on television and social media. They do not focus on that people will tell each other about the food swap. They think that sharing about food habits becomes more personal. The food swap is not focused on communities, or on the social aspect. They are more focused on promoting that you can make everywhere at any moment on the day different kinds of food swaps, in houses, train stations, airports, sports halls, etc. The target group for the food swap was at first generally young people, from twenty to forty, but what they saw was that it actually worked for everybody really well and that more people were interested and not only their target group.

The expert is interested in how the food swap can work in the community and the social aspect. Are food habits something that is shared among students, or is it seen as something more private? This is something they did not investigate.

With having established all the literature research and expert interview the goal of the bachelor project can be made clearer. The goal of the project is: to aim for a tangible device that helps with maintaining the motivation of students to maintain the food swap. The device should give social connectedness and/or social support.

2.5 State of the art

There are no products on the market that are exactly the same as the product I want to design. The following products have a relation to the desired product. The state of the art is search for different categories. The different themes are social connectedness, awareness, and motivation. First the different products will be introduced and after they will be put in the different themes.

Fitbit,

Fitbit is a tracker which is worn on the wrist, and it tracks the activities of the individual wearing the device, the Fitbit is shown in Figure 2.1. It keeps track of the daily lifestyle of the person. Fitbit can track your steps, it counts the calories burned, tracks the heart rate, sleep, distance travelled and more health-related data. Fitbit engages in healthy competition with other users or yourself by completing challenges. When competing there are virtual trophies. There is also a Fitbit community, users can connect with each other. They can share experiences and get support and motivation from other users. This community is online. It is possible to connect with friends, when using this feature, you can see each other's activity and compete in challenges together and send messages. Fitbit has its own social platform, so you can interact with users from around the world. The goal is to provide a supportive and engaging environment for the users to stay motivated through their journey. (Ringeval, et al, 2020).

Mijn Eetmeter,

The Voedingscentrum has an app, "Mijn Eetmeter". It is an app in which you can scan products in. The products scanned are those you eat during the day, which is shown in Figure 2.2. And it helps create awareness of what you eat and what for nutrients are in the food, how many calories you eat, fat intake, and fiber. The app wants to give balance in eating behaviour, it gives personal advice on nutrients, and does someone gets enough fiber during the day.

Necklace,

A necklace which can capture the motion in the throat of individuals is invented, figure 3.



Figure 2.1: Fitbit



Figure 2.2: Mijn Eetmeter

There is a sensor in the necklace. This motion is transmitted to a phone application which can help the user improve their health. The data that the device will capture is detecting food consumption, it gives more insight into the eating habits of the users, which results in more awareness, which is critical for maintaining a healthier lifestyle (Kalantarian et al., 2015).



Figure 2.3: Necklace

EdacuTableware,

EdacuTableware is an interactive tableware that should make eating more pleasurable and has to improve eating habits. It does this by giving feedback and to encouraging the eating behaviours of the individuals. There are two different devices, the EaThermin and the TeaThermin, 2.4. EaThermin is a fork-type device which can be used while eating and the TeaThermin is a cup-device which is used while drinking. Both the devices give sounds when the individual is eating, by giving sounds while eating and or drinking they want to encourage the eating habits. By producing these sounds, the main point is to let people who are using the devices getting to smile and be happy while eating healthily. (Kadomura et al., 2013)

Food games,

Food games can also help people with eating more healthily. An interactive system that interacts with the individual using it is invented, Figure 2.5. A dinner plate and a micro-

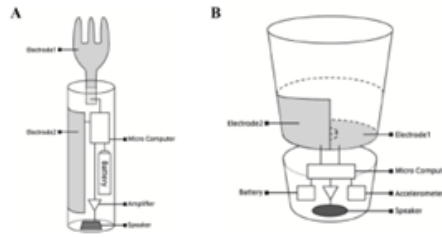


Figure 2.4: EdacuTableware

projection device can help. The plate interacts in the form of simulation games with the individual. In the game, you are required to give food to their virtual pets by eating different kinds of food during the meal. The animals judge the eating of the individual based on the weight of the plate. The game gives reminders to the individual using the device, and it encourages the individual (Zhao, et al., 2021).

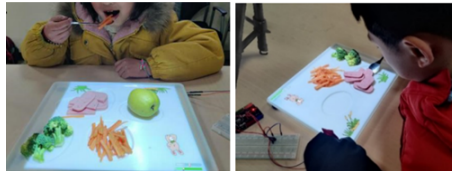


Figure 2.5: Tableware

All these products above intersect with some components of my end goal. How it intersects with some of my aims is explained below.

Social connectedness

The Fitbit intersects with the project because I want to have a social aspect, a sort of community, which is succeeded with the tangible device. I want the users of my project to experience support and motivation from their peers just as Fitbit does.

Awareness

The element that “Mijn Eetmeter” has in common with the tangible device I want to come up with is that it has both something to do with eating healthier. This app wants to give awareness to people, by showing them how much nutrients they eat per day. The tangible device I want to design must help people with eating healthier. The Necklace, the necklace gives awareness to the individuals. It gives awareness about maintaining a healthier lifestyle. This is a theme that is also in my project, I want individuals to maintain their new eating habits of the food swap and that they will be more aware of what they are eating.

Motivation

Food games, this device encourages the individual, and that is where it intersects with my project. Eventually, I want to help people with eating more healthily, I want something that let people interact with each other, that people support and encourage each other. This is a way so the individuals will be more motivated. EducaTableware encourages individuals to eat healthy while doing that in a social situation. With the tangible device I want to design, I would also like that people will be encouraged by eating healthy while eating together, in social situations.

2.6 Peer interviews

The peer interviews are all held in an area where the participants felt at ease. The living room of the student house is where the peer interviews have taken place. This is chosen so that the participants would not feel out of their comfort zone. Roommates could walk in and out during the interview. It would feel like a 'normal' conversation so they would not be afraid to say something they thought was wrong.

First, I let them all read and sign the information letter and the consent form. After, I started by introducing my graduation project, what it is about and if they had any questions beforehand. In the middle part of the interview, I asked them the question thought of beforehand. I could comment on what they were saying and ask for more clarification. When having asked all the questions to the interviewees I asked them if they had anything to add, if they had questions or wanted to make a comment. Lastly, I thanked them for their time and for participating in my interview.

By holding interviews with students who live in student houses it is the goal to gather more knowledge about what the tangible device should be able to do. Gather more information about what motivates students and how much they already know about nutrition. The questions asked and the consent form are in the appendix. I have interviewed seven different students who live in student houses.

What is interesting to note is that almost all students do not think they have much knowledge about nutrition in general. They all think it is important to have healthy eating behaviours but also say that they do have not much knowledge about nutrition. This is a reason why people would want to get inspiration/examples from either the tangible device or from other persons what kind of food swaps are out there and what they could use. The feedback that the interviewees want to receive from the tangible device is some kind of overview of how well you are doing with the food swap and inspiration for what kind of food swaps they can do.

Money plays a big role in the students eating behaviour. If the healthier option is significantly cheaper than the healthy option, everyone would choose the unhealthy option. Students pay attention to how much the product cost and that influences their eating behaviour. What a couple of students said is that they think that unhealthy food is cheaper than healthy food and that they would not know an alternative for the food choices they make which is healthier and not significantly more expensive.

The motivation for students to eat more healthily can be personal, however, what I noted during the interviews was that there were some things that came back multiple times. What was named several times was that having a good feeling is very important, eating can help bring individuals a feeling of satisfaction and being happy. Furthermore, getting fitter, and health reasons is something that motivates the students. Next what motivates is when you are not doing the food swap alone, not for everyone to the same extent, but to some extent everyone agreed that having someone else doing this with them could help them with their motivation. Talking with individuals who are doing the same as them, the food swap could also motivate some individuals, talk about the progress, exchange some ideas for the food swap, and communicate about how they are proceeding.

Lastly, when you are doing, pursuing, goals together with other people also motivates some students. It can help in getting started with making food swaps, but some interviewees were also afraid that when they have reached a goal it could be difficult to proceed when achieved. When doing the food swap with housemates the students mentioned that if it affected their dinner, it would maybe be important to talk about it with everyone. This way everybody can keep the wishes of people in mind. One interviewee said that a point

system would motivate them to keep making the food swaps, with goals/aims.

How the tangible device should look was a difficult question. Interviewees said that they would like to have something they could carry with them to remind them of the food swap. Because they would not be always at home, and they would like to also proceed with the food swap not at home. Interviewees said that it could be motivating if there was also something in the living room which creates a community, to remind them.

2.7 Requirements

The requirements for the tangible device are decided by the interviews and are based on the literature research. There are some harder requirements and some softer. When having established the requirements, I want to start brainstorming ideas for concepts of the tangible device. The concepts thought of must be evaluated by the target group and with the feedback on those concepts I must keep improving.

To decide on the requirements, it is important that they should be SMART, Specific, Measurable, Attainable, Realisable, and Time bounded. Specific stands for that the requirement should be clear and concrete. Measurable in SMART is that the requirements should be able to be verified. Attainable means that it is achievable and feasible to exhibit the requirement. Realisable, is the project achievable with the given constraints where the project must be developed, and are the requirements aligned with the project's goal? Lastly, the project should have deadlines, Time bounded (Mannion & Keepence, 1995).

The goal of the project is: to aim for a tangible device that helps with maintaining the motivation of students to maintain the food swap. The device should give social connectedness and/or social support, this is a hard requirement for the project.

The requirements with their meaning to achieve my goal are:

Social support, that individuals feel a sense of support and comfort from their peers, that they feel like they are supported/helped in their journey, supported in emotional/psychological, physical, or informational way. This can be measured when measuring the feeling of social support beforehand and during the use of the device. It is feasible to create social support within the resources and constraints that are also aligned with the project's goal.

Social connectedness, that an individual feels close and connected to others. The feeling that you belong to a group of people. As well as social support it could be measured the same way. It is achievable to create social connectedness and it is aligned with the project's goal.

Awareness, that an individual will be more mindful towards healthy eating. That they are aware of what they eat and what their choices of food have of effect on their well-being. It is achievable to measure this requirement and it is realisable.

Goal setting, how much does the tangible device evoke a goal where the individuals can work towards. It is measurable, achievable, and realisable the requirement goal setting.

Motivation, gives the tangible device the individual motivation to keep making the food swap during their day-to-day life. It is measurable, achievable, and realisable the requirement motivation.

Inspiration, how much does the tangible device give the individuals ideas for different kind of food swaps and how much does the tangible device inspire the individuals to different food swaps. It is measurable, achievable, and realisable the requirement inspiration. The motivation for these requirements is written below.

The literature found states that it helps the have social support to get motivated. Social support can help to get intrinsic motivation up, it grows internal motivation and self-determination. From the interviewees, it has become clear that it depends per person who would like to get feedback and how much feedback from fellow students. In general, all the interviewees would not mind getting some kind of feedback from fellow peers who are also participating in the food swap. Positive feedback was better than negative feedback. This creates the first requirement: Social support. How the social support should look like is in the form of the possibility of talking to each other for giving some tips about the food swap, talking about the progression, and supporting each other when it is not going so well.

The next requirement is social connectedness. From the literature research, it is found that the environment where the individuals are is crucial. This means that the tangible device should create an environment where the individuals feel motivated and connected to each other. Through the interviews, it became clear that most of the individuals would like a tangible device that they can bring with them everywhere. To get more connectedness the interviewees also said that it could be a device which is partly in the living room somewhere and the other part something which you can bring everywhere. This means that the tangible device should consist of two parts.

The third requirement should help people make more aware of what they eat, from the literature it is found that individuals can be not fully aware of the eating decisions they make during the day, mindless eating, and this can lead to unhealthy eating behaviour. With the interviews, it became clear that all the individuals would like inspiration from the tangible device to get more knowledge about what to eat, and what the possibilities are. This get them more aware of what they can eat and what is healthy. The tangible device should help make the decisions of what to eat easier.

From the interviews, it also becomes clear that the individuals would like inspiration from the device or from the other participants to get more ideas about what kind of food swaps they can do. This should also be considered a requirement.

The fourth requirement could be goal setting, from the literature it is found that goal setting helps with improving the motivation of the individuals. The interviewees stated that goal setting could help them in the beginning, but that it does not have to be the same as the other participants and that it can help in the beginning, but interviewees stated that it could also be difficult having a goal and when reached to go on.

Chapter 3

Ideation

With having the requirements for the tangible device, the ideation phase can start. First by brainstorming a lot of different concepts/ideas. The brainstorm consists of thinking of almost 100 different concepts. These concepts will be put in different categories, exchanging tips, getting inspiration, getting motivation, awareness, connectedness, and conversation starter. Next, the concepts will be put next to the requirements, such that the 100 concepts can be downsized to a lower number. After, the concepts that remain will have to be even more downsized, this will be done by holding peer interviews. With the comments of the interviewees there will be made another selection.

3.1 Brainstorm

Various methods can be performed to facilitate brainstorming sessions. In my case, I adopted a technique where I documented every idea that came to mind. To generate ideas, I positioned myself in an environment where there was a lot of different stuff around - the living room. This setting allowed spontaneous inspiration, as my roommates could walk into the room and contribute their own ideas. Individuals with different knowledge have the most success to benefit from the social exchange of ideas (Brown & Paulus, 2002). Since my roommates possess different backgrounds, and thus have different knowledge their presence proved to be valuable. I benefited from the exchange of ideas. My approach to brainstorming involved a combination of individual and group brainstorming sessions.

Some of the different ideas are keychain, necklace, whiteboard, cooking book, light system, puzzle, memory, grocery shopping bag, etc. in total I came up with 92 different concepts. The 92 different ideas with explanations are found in the appendix.

3.2 Downsizing

In chapter 2.6, requirements were established for the tangible device based on the literature and interviews. These requirements include social support, social connectedness, awareness, goal setting, motivation, and inspiration. All the different requirements should be taken into account when selecting the concepts. One of the essential requirements for the tangible device is the inclusion of social support and/or social connectedness, as explicitly requested by the client. Additionally, motivation is also one of the more important requirements, as it plays a crucial role in maintaining motivation to continue making food swaps.

To downsize the 92 initial ideas to fewer it is important to have a thorough evaluation process. First, I will carefully review each idea, and critically assess possibilities for

improvement or merging ideas together to create more refined and coherent concepts. Considering that social connectedness or social support is a key requirement it is important to consider how they can be incorporated into these ideas. As a result of this process, the 92 ideas were downsized to 55, which can be found in the appendix, A.1.

There are six different requirements to consider, with varying levels of importance. To determine which concept has the most potential, a plus and minus system will be used. This system involves a scale similar to the one in Table 3.1, with explanations of the meaning of the plus and minus signs provided in Table 3.2.

-	-	0	+	++
---	---	---	---	----

Table 3.1: plus and minus scale

++	Has fully this requirement
+	Does have a bit of this requirement in it
0	Neutral
-	Not sufficient enough
-	Does not have any aspect of this requirement

Table 3.2: explanation of the meaning of the scale

A total of 55 different concepts/ideas will be evaluated using the aforementioned scale for each requirement. Table A.2 which is found in the appendix, presents the scores for each idea on the various requirements.

After every idea/concept has been scored, it has to be downsized again to approximately 25 different ideas. Beforehand the client and I decided that we wanted to have around 25 different ideas to go through in the next round. This amount was chosen to ensure a manageable interview process. Presenting too many ideas could make the interview duration too long. This number ensures that the ideas that scored very low on the requirements are filtered out and that there are enough options left to explore and evaluate during the interviews.

Firstly, the scores in table A.2 will be translated into numbers. What the values of the scores are is presented in table 3.3.

scores	number
-	0
-	1
0	2
+	3
++	4

Table 3.3: Translation

Not only do the scores have to be translated into numbers, the importance of the different requirements also has an influence in determining which idea/concept will remain. Each of the six different requirements will be assigned a weight, reflecting their relative significance. The most important requirements get a higher weight than the requirements that are less important. Social connectedness and social support are considered the most

important, followed by motivation. The other three requirements, inspiration, awareness, and goal setting are considered equally important. The weight attached to each requirement is presented in table 3.4

Requirement	Weight
Social connectedness	3
Social support	3
Motivation	2
Inspiration	1
Awareness	1
Goal setting	1

Table 3.4: Weight of requirements

For each idea, the weight of the requirements will be multiplied by the scores they obtained when translated like table 3.3.

An example of how this will be converted is done for the hanging system and stick, which can be seen in table 3.5:

scores and requirement	number
0 (social support)	2
+ (social connectedness)	3
+ (awareness)	3
++ (goal setting)	4
+ (motivation)	3
- (inspiration)	0

Table 3.5: Translation hanging system and stick

The outcome of the number in table 3.5 will be multiplied by the weight of the respective requirements in table 3.4.

score*weight	outcome
2*3	6
3*3	9
3*2	6
4*1	4
3*1	3
0*1	0

Table 3.6: multiplying score and weight

After performing all the calculations, the outcome values will be added up. Subsequently, the cut-off value needs to be determined. It is important to calculate the cut-off value after having calculated all the values for the ideas/concepts. This approach allows us to determine the score at which approximately 25 ideas remain.

In table 3.7 the values are calculated for every idea/concept. Additionally, a short explanation of the different ideas is also found in 3.7, a longer explanation is found in table A.1, which is in the appendix.

Idea/concept	Explanation	Value
hanging system and stick	When having done a food swap a stick can be hang on the system. The system goes down because of the weight. On the ground it hits a button, when that happens the goal is achieved and a light springs on. When the goal reached you pass the stuck to the next person.	28
A4 and Binder	An A4 paper hanging in a common room on which people can write things related to the food swap. This A4 sheet you change every week, and the "old" one you put in a binder, which you can always grab to flip through it	35
Light cord and checkbox-machine	Whenever you make a food swap, you can turn on a light and eventually a nice little shape comes out which you can see	31
Grocery shopping bag and shopping lists/eating list and planner	On the bag are written food swap suggestions. This is combined with a planner/eating list that can be created together with housemates.	34
Phone case	There is printed inspiration for food swap on the phone case	14
Keychain	The keychain has a unique form of a food swap. each housemate can carry one with them wherever.	32
Jewellery	A piece of jewellery is worn, this ornament can light up by someone else who is also wearing a piece for support	21
Crocs	When having done a food swap you can put a pin in the hole of the shoe. Everyone in the house wears them.	36
Friends book/ giving through book	People can put experiences/motivational things in the booklet or ideas for food swaps. This booklet is then given back to the relevant person and they can read it and give it again to someone else to write in it.	37
Whiteboard/memoboard	People can hang/write their own food swaps, or write motivational messages, which everyone else can see. You could also display your results. This board is hung in a common room	32
Newsletter/magazine	Every week or month, you get a newspaper/magazine and in it are ideas, recipes and stories and/or experiences of other people.	31
Pointsystem	A point system tracked by abacus, there are as many rows as roommates. Each housemate has a row. And whoever is first to move all his beads, which is allowed if you have made a food swap, gets a reward.	28

Balloon	The colours of the balloon represent the different eating change group, when having done a food swap you can hang a balloon on your door	24
Tea/coffee can	it contains questions that can start a conversation about the food switch and people can also put in their own ideas for healthy food swaps.	30
cookbook	In the cookbook are all recipes that participate in the food switch	34
Food scanner and scale	The scanner allows you to scan food, it can show the differences between food items. If you put a product on the scale then it gives different suggestions for something you could swap it with	17
Food box	The box/kit will be sent to you once a week for the whole house. In it are ideas for swaps you could make that week.	24
Magnet	On this magnet are food swaps, you can collect those magnets and place them on students' home fridges	24
Labels	You can swap the coloured labels with another coloured label. So you can see right away which food item you would be good at swapping.	16
Container	You can personalise it all together so that the box has your needs. You can give it 5 different sizes of compartments for different food groups.	23
Games	<p>Monopoly</p> <p>Puzzle</p> <p>Dice</p> <p>Card Game</p> <p>Memory</p> <p>Spinning board</p> <p>Grab bag</p> <p>Bingo</p>	<p>30</p> <p>21</p> <p>33</p> <p>27</p> <p>24</p> <p>32</p> <p>26</p> <p>32</p>
Watch	It can give reminders to the user and display progress. It also has an online platform through which you can connect with other people.	26
Snack dispenser	A vending machine from which you can get ideas for an eating change.	22
Calendar	A tear-off calendar that hangs centrally in the house, from which you can tear off a leaf each day. Each page features a different food change, or also facts.	32

Plate	The board can detect what kind of food is on the plate and can use that to inspire what you could swap next time.	18
Fridge	It can show what's in the fridge for food and, based on that, give advice for anyone for which you might switch certain foods	14
Infographic/motivation poster	It shows people food swaps and the effects it could have, long-term.	23
Art	There is creative art in a common room for students that promotes the eating change.	24
Timer	Every so often, a small device beeps to remind you to make the food change	23
Competition	Each housemate has to work with a food swap in his/her cooking and then the others can vote on the food.	37
Sweatband	Everyone wearing this band participates in making food swaps that day/week	21
Card	It's a pass you put in your wallet that has food swaps on it that you can do	13
Microphone	The microphone is on a table, which should be able to start a conversation over the dinner change	23
Clock	When it goes off in the room it gives the opportunity to be reminded of the food swap and gives space to then talk about it.	21
Cage	Everything you swap you put in the cage	32
Fruit basket	A basket containing healthy food swaps that people can take out.	24
Good pan	If someone wants to make use of this pan then he has to make a foodswap.	22
Envelop and piggy pot	Each housemate has an envelope where they can put food swap related notes in. At the end of the week it will be opened and reviewed.	35
Paperclip	The paperclip can keep labels on which there are food swaps	36
Stripe list	On the stripe list, put a mark when you have made an food swap,	25
Chip	You can put the chip in your laptop and then there are ideas on there for the food swap	20
Duct tape role	The duct tape roll is a tear-off roll, you can keep tearing off pieces where food swaps are on and you can stick them on doors/cabine	34
Lunch box	If you use the lunch box, you have to make an eating change that day.	30
Stuffed animal	A stuffed animal in the shape of a food swap and when you squeeze it it says motivational texts	14

Metertje	You see the pointer go up and/or down. That way you can see your progression, if it goes up you're fine with the food swap	17
Counter	The counter keeps track of how many food changes you have made and this is then put into a shared online chart.	27
Food packaging	On the food packages there are food swaps that people could make	26
Stickers	There are all stickers of food swaps and you can then collect them	20
Advent calender	Each day features a different food swap.	32
Music box/ radio	you can all listen to an eating change podcast	39
Glasses	That lets food 'change' with the virtual glasses	12
Bottle	On the bottle are pictures of food change	20
Vest	If you wear the vest you have to make a food swap that day	25
Photo frame	A picture frame that is digital which displays food swap related images and automatically moves on to the next one,	35
Tea questions/ coasters	Just like on the pickqick tea, there are questions on the tea card	28

Table 3.7: values

After calculating all the different values, the cut-off value can be determined. By considering each game in the game category as separate idea, there are 62 different ideas. After arranging the values in descending order, it was found that the cut-off value of 30 would result in 24 different remaining ideas, which aligns with the desired number. In table 3.8 is seen which ideas/concepts will be retained after eliminating those that scored below 30.

With the 24 different ideas in table 3.8 I will go to the target group and interview them.

Idea/concept	Value
A4 and Binder	35
Light cord and checkboxmachine	31
Grocery shopping bag and shopping lists/eating list and planner	34
Keychain	32
Crocs	36
Friends book/ giving through book	37
Whiteboard/memoboard	32
Newsletter/magazine	31
Tea/coffee can	30
cookbook	34
Monopoly	30
Dice	33
Spinning board	32
Bingo	32
Calendar	32
Competition	37
Cage	32
Envelop and piggy pot	35
Paperclip	36
Duct tape role	34
Lunch box	30
Advent calendar	32
Music box/radio	39
Photo frame	35

Table 3.8: 24 remaining ideas

Chapter 4

Evaluation

The students will be interviewed two different times, the first time it will be about the 24 different ideas which are presented in table 3.8. After, the ideas will be critically looked at again and will be downsized to fewer improved ideas, which will be more detailed. The second interview is conducted with the remaining ideas to gather additional feedback and suggestions for improvement.

4.1 First interviews about the different ideas/concepts

Five different interviews are held, and with the information the interviewees give the ideas will be downsized.

The interviews with students are held in the interviewee's house. This is because it is a place where they feel most at ease/comfortable. First, I will give the interviewees a short introduction about the project and explain to them what the food swap is and what the aim is and what I want to achieve with my project. Next, I will go over every 24 different ideas and will hold a short conversation about the idea and what they think about it. What is their first thought on the particular concept, is it something they would use? They will have to give a rating to the different ideas, from zero to ten for how much they like the idea and also explain why. Zero means they do not like the idea at all and 10 that they think the idea is very good. Furthermore, I will ask how much they think the device would motivate them to make a food swap, and also if the motivation would maintain after some time.

It will take around 1 hour and 15 minutes to complete one interview. The interview questions will be in the appendix. At the end of the interview, I will thank the participants for participating and ask if they have anything to add or have questions.

4.1.1 Analyzing

In table 4.1 the pluses and minus of all the 24 different ideas are written down and how much they scored on likeability based on the interviews held. Behind the bullet points it is written how many interviewees said that specific bullet point. In figure 4.1 is a small overview of the descending order based on the likeability scores given. Below, a small summary of the interviews is found.

Idea	Plus	Minus	Likeability score
A4 and Binder	- Togetherness (3/5) - Sharing ideas (3/5)	- Boring (2/5) - Simple, easy to forget (4/5)	5.4

	- Social encouraging (4/5)	- Not having the discipline (3/5)	
Light cord and checkbox-machine	- Social connectedness/support (5/5) - Interactive (2/5) - Motivation (5/5)	- Inspiration (3/5)	7.8
Grocery shopping bag	- Shopping bag (3/5) - Inspiration (3/5)	- Planning (3/5) - Less social connectedness (5/5)	6.3
Keychain	- Conversation starter (3/5) - Social connectedness (3/5) - Reminder (3/5)	- Accustomed (1/5) - too subtle (3/5) - Not everyone would use the keychain (2/5)	6.0
Crocs	- Pins are fun (5/5) - Motivating (5/5) - Social connectedness (5/5)	- Not wearable for everyone (1/5) - Needing new pins in the long term (4/5) - Inspiration (1/5)	7.8
Friendsbook	- Motivating (2/5) - Inspiration (3/5) - Social connectedness/support (5/5)	- Much effort (2/5) - Forget to give to roommates (1/5) - Not everyone would use this product (3/5)	6.1
Whiteboard/memoboard	- Simple, quick to use (3/5) - Social connectedness/support (4/5) - Inspiration (2/5)	- Not sustainable in the long term (3/5) - Will be used for other things than the food swap (1/5) - Easy to forget (2/5)	6.3
Newsletter/Magazine	- Generate Motivation (4/5) - Inspiration (3/5) - Reminder (4/5)	- Not relatable to roommates (2/5) - Can be done alone (3/5)	7.8
Tea/coffee can	- Conversation starter (2/5) - Social activity (2/5)	- Limited questions (4/5) - Not everyone would use this (2/5)	5.8
Cookbook	- Inspiration (5/5) - Motivation (4/5) - Approachable (4/5)	- Not knowing how good the swap is (2/5) - Not really social connectedness/support (3/5))	7.6
Monopoly	- Fun that it is a game (3/5) - Creative (1/5) - Social (4/5)	- takes too long (3/5) - Not effective (3/5) - Not everybody would use it (3/5)	5.6

Dice	<ul style="list-style-type: none"> - Interactive (1/5) - Creative (2/5) - Social (4/5) 	<ul style="list-style-type: none"> - Could be boring potentially (2/5) - Not everybody would use the product (2/5) 	6.1
Spinning board	<ul style="list-style-type: none"> - Togetherness (3/5) - Fun to spin (3/5) 	<ul style="list-style-type: none"> - Would not initiate using this product (2/5) - Would not work in long term (3/5) 	5.4
Bingo	<ul style="list-style-type: none"> - Goal setting would work (3/5) - Motivating (4/5) 	<ul style="list-style-type: none"> - Not in the long term (2/5) - Feeling of pressure (1/5) 	7.0
Calendar	<ul style="list-style-type: none"> - Inspiration (3/5) - Fun (3/5) - Reminder every day (2/5) 	<ul style="list-style-type: none"> - Forgetting to tear of a page (2/5) - Less social connectedness/support (3/5) 	7.2
Cage	<ul style="list-style-type: none"> - Social (2/5) 	<ul style="list-style-type: none"> - Food waste (5/5) - Money waste (5/5) - Bad for the environment (3/5) 	4.3
Competition	<ul style="list-style-type: none"> - Social (4/5) - Togetherness (3/5) 	<ul style="list-style-type: none"> - Not the best for creating awareness (3/5) - Does not keep motivating (3/5) 	7.1
Envelop and piggy pot	<ul style="list-style-type: none"> - Social connectedness (3/5) - Inspiration (2/5) 	<ul style="list-style-type: none"> - Higher threshold to start (2/5) - Would not be used by everyone (3/5) - Not really motivational (3/5) 	5.4
Paperclip	<ul style="list-style-type: none"> - Could work (1/5) - Social (3/5) 	<ul style="list-style-type: none"> - Boring (1/5) - Simple, easy to forget (3/5) 	5.8
Duct tape role	<ul style="list-style-type: none"> - Fun (2/5) - Inspiration (3/5) - Motivation (3/5) 	<ul style="list-style-type: none"> - Can get messy (2/5) - Can not choose yourself what to put on your own door (1/5) 	6.7
Lunch box	<ul style="list-style-type: none"> - Togetherness (2/5) - Difficult to imagine what kind of swaps to do (3/5) 	<ul style="list-style-type: none"> - Time consuming (2/5) - Not used by everyone (3/5) 	6.2
Advent calendar	<ul style="list-style-type: none"> - Motivated to open (3/5) - Social connectedness if opened together (4/5) 	<ul style="list-style-type: none"> - For short period (3/5) - Not everyone will open a box (3/5) 	6.9
Music box/radio	<ul style="list-style-type: none"> - Conversation starter (2/5) - Motivation (2/5) 	<ul style="list-style-type: none"> - Boring (1/5) - Would be used also for other things that the food swap (1/5) 	5.7

	- social support/ connect- edness (3/5)	- more used in the back- ground and not active for the food swap (4/5)	
Photo frame	- Inspiration (2/5) - Social (3/5) - Fun to see what room- mates send in (3/5)	- It can be used for other things than the food swap (2/5) - Can get easily accus- tomed to this device and therefore forget it is there (2/5)	6.7

Table 4.1: Analyze of the concepts

1	Light	7.8
2	Crocs	7.8
3	Newsletter/Magazine	7.8
4	Cookbook	7.6
5	Calendar	7.2
6	Competition	7.1
7	Bingo	7.0
8	Advent	6.9
9	Duct	6.7
10	Photo	6.6
11	Grocery	6.3
12	Whiteboard/memoboard	6.2
13	Lunch	6.2
14	Friendsbook	6.1
15	Dice	6.1
16	Keychain	6.0
17	Tea/coffee	5.8
18	Paperclip	5.8
19	Music	5.7
20	Monopoly	5.6
21	A4	5.4
22	Spinning	5.4
23	Envelop	5.4
24	Cage	4.3

Figure 4.1: Table of ideas descending order

Idea	Minimum	Maximum	Mean	Std. Deviation
HouseCookBook	4.3	7.8	6.4	.9

Table 4.2: Descriptive

Based on the five different interviews there is gathered a lot of new information. As seen in table 4.2 the mean is 6.4 and the standard deviation is 0.9 which means that the scores given are clustered around the mean.

What immediately stands out is that the idea Cage scores very low, a 4.3. Questions that

arise were what would happen with the food that people put in the cage, food waste. Next, people paid for that particular food type and by using the cage they will be throwing away money. This is not something students like to do.

Furthermore, what stands out is that the ideas that incorporate some kind of reward have higher scores on likeability. This is seen by for example the Light cord and checkboxmachine and Crocs idea, it gives the students more motivation to make use of the product. Additionally, the interviewees also liked if they got reminded in a certain way for making the food swap, like the idea newsletter/magazine or the calendar. Next, the interviewees were positive if they got inspiration about different food swaps ideas from the concept, like the cookbook, photo frame, duct tape role, and calendar.

The ideas from table 4.1 have to be downsized to five and be improved by the criticism given by the interviewees.

The five ideas that scored the highest are the light cord and checkboxmachine, Crocs, newsletter/magazine, cookbook, and calendar. What these ideas have in common is that they motivate the users to make food swaps, give inspiration, and remind the users for making them.

The ideas that scored the lowest got the feedback that they would not be used by all the interviewees, because of the high threshold or missing the discipline or that they would simply forget to use the product. This is something to keep in mind when improving ideas.

First renewed idea, HouseCookbook.

The idea cookbook received a score of 7.6 on likeability and has a lot of good qualities. It serves as a source of inspiration and motivation while it remains approachable. However, one area where it lacks is in social connectedness and support. Conversely, the idea friends book has a lot of social connectedness and support. Considering the strengths of both ideas, they could be merged to result in an improved idea.

The proposed new idea entails the inclusion of pages where students can write down and share their favourite dishes and snacks that incorporates food swaps. Moreover, on these pages, there are questions to be filled in to give more insight into the food swap a student wrote down. Furthermore, there will be pages that already contain inspiration for dishes which incorporates the food swap. Alongside these recipes, there will be information about the benefits of each particular food swap.

Each housemate will be given the chance to write their dish in the HouseCookbook and the book will be placed in the common kitchen of the student house. Everyone can access the cookbook easily and the students will always have the opportunity to write new recipes in the cookbook. This will give the students inspiration, motivation, social connectedness and support.

The front of the HouseCookbook will be shown in figure 4.2. Within its pages, there will be already recipes or snacks written down that incorporate food swaps, which serve as inspiration. It does not only present the new recipe, but also information about why a certain food swap is made, for what product it is swapped, and why it is beneficial to make this food swap. The recipes will be written down and a photo of the product that is swapped will accompany the recipes. On the right page in figure 4.3 it is visualized how these recipe pages will be presented. For more interaction between the students, there are pages that are intentionally left blank. On these pages, there are written pre-made questions, just like in a friends book. These questions are: What is the food swap you have made? How would you rate this food swap on a scale of one to ten? What do you like about this particular food swap? What is the name of the dish/snack? Write down the recipe if possible, for a food swap snack, a recipe may not be necessary and can thus be

left blank. Besides writing down all answers to these questions, students will also be asked to write down their names. Whenever a roommate is flipping through the HouseCookbook he can identify who contributed some of the ideas. In figure 4.3 is seen how such a page is visualized.

The HouseCookbook serves to give inspiration for different food swaps which can be made throughout the day. While looking for inspiration for dinner or when wanting a healthier snack option, this book can be used. The HouseCookbook will allow all housemates to write down their ideas for a food swap, and look at the different ideas of their peers, which will generate social support. The book will have a place in the common area, for example, the kitchen, where everyone can easily access it and flip through the book, which will create a sense of community.



Figure 4.2: HouseCookbook

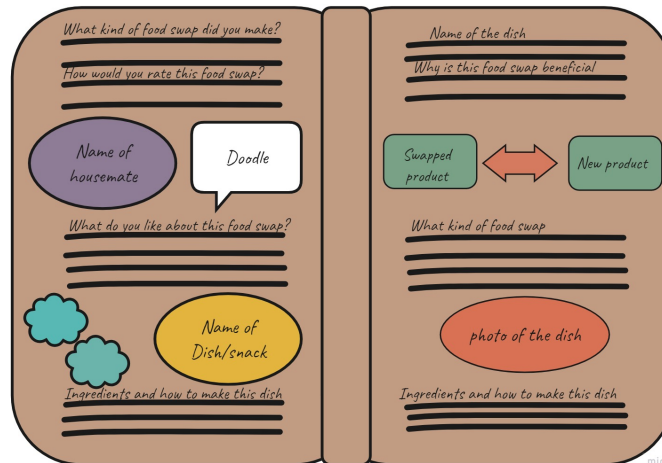


Figure 4.3: Inside of the HouseCookbook

Scenario and storyboard HouseCookbook

Scenario:

The HouseCookbook will be used in a student's house, it does not matter how many students there live. The cookbook will be given to all the people who live in the house and they can write their favourite dish which contains a food swap into the book. The cookbook will also contain pages with inspiration and an explanation of why a certain food swap is better.

When the students have to cook for their house, they can grab the book and look for inspiration, figure 4.7c. What did their housemate write down what they liked for a food swap? In figure 4.7d the student has found a recipe with a food swap.

In figure 4.5 is seen that a person knows a nice food swap and will write it down in the HouseCookbook.

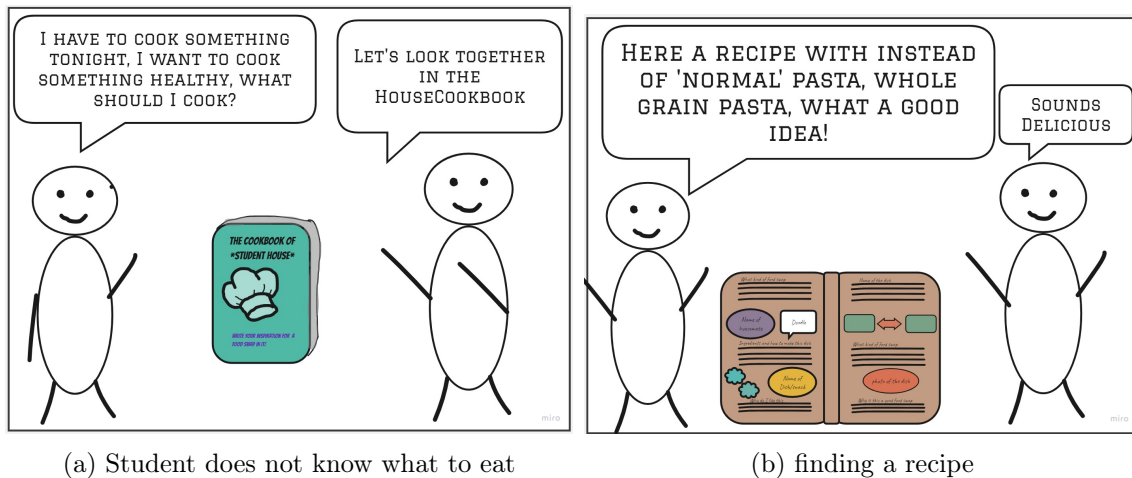


Figure 4.4: Storyboard about finding a recipe



Figure 4.5: Storyboard Cookbook

Second new idea, CrocsWhiteboard.

The idea of Crocs received a relatively high score, but there are a couple of issues with this idea. Firstly, it is not wearable for everyone, which will limit its accessibility to individuals. Additionally, it does not provide enough inspiration for different food swaps, which is something that the students wanted, this information was gathered from the first interviews. On the contrary, the interviewees said that from the whiteboard/memoboard they would get inspiration because people can write their food swap ideas on it. For the renewed idea these two concepts can be combined.

The new idea involves splitting the whiteboard/memoboard into two different sections. One half will contain the holes, similar to the holes found in Crocs, where the different pins can be inserted. The other half of the board will consist of whiteboard material, which will serve as a canvas where people can write down ideas/inspiration for food swaps. Notes can also be attached on the whiteboard section, they can be hung up with magnets, which will enhance its functionality. Each student in the student house will have their own CrocsWhiteboard hung up on their room door. The CrocsWhiteboard is seen in figure 4.6.

The CrocsWhiteboard has multiple advantages. First, it will generate motivation because the students can collect and display the pins, which will provide a tangible goal to

work towards. Next, the whiteboard section of the CrocsWhiteboard will foster inspiration. It allows the students to write down various ideas and quotes on the door of their roommates. This provides an interactive experience that also helps with creativity and motivation.

How it works is that on each bedroom door hangs a CrocsWhiteboard. When students have made a food swap they can search for a pin from the designated pin basket located in a common room. These pins correlate to a certain food group, fruits, vegetables, grains, protein foods, and dairy, with each pin displaying a unique shape.

During shared meals which incorporated a food swap, for example, during dinner, all students who eat together can put a pin onto their CrocsWhiteboard. Furthermore, when doing a food swap during the day, for snack or lunch, students can also add a pin to their board. However, if a product that the student purchased is used repeatedly, only the first instance of using the new product warrants a new pin on their board. When using the product multiple times it will not receive additional pins. Only when the product is consumed and the product is bought another time, a new pin can be added. This can be done as long as when the students think that the new product is not yet their new normal. When the product has become their new normal, it will no longer be considered a food swap, which will mean that the student can not add pins for that particular product on their board anymore. When doing this for a long time, it will result in a full board, to maintain a fresh start, all the pins will be collected and returned once a month to the pin basket, allowing the students to start collecting the pins again. The pins allow each student to see the progress of their roommates, which is something that the interviewees also were positive about. When seeing the progress from one another it can start a conversation about the food swap, the student can ask their roommate what kind of food swap they made, and what their pin represents.

The whiteboard section of the CrocsWhiteboard offers additional interactive interactions. Roommates can write motivational quotes on it, but also share food swaps they enjoyed. When someone thinks that the person who the board is from also will enjoy some kind of food swap, food or drinks, it can be written down on their board. Moreover, the students can also write recipes directly on the board, or on little notes that can be hung up on the board with magnets. With this, it allows for engagement and it will foster a sense of social support and inspiration among the students.

By combining the interaction of the pins and the whiteboard section, the CrocsWhiteboard tries to generate motivation and social interaction within the student's homes.

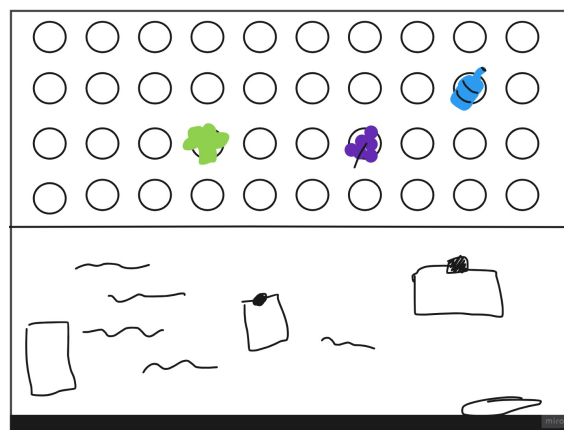


Figure 4.6: CrocsWhiteboard

Scenario and storyboard: CrocsWhiteboard

Scenario:

Each student in the house has a CrocsWhiteboard like 4.6 hanging on their door. The pins that can be attached to the board are found in a pin basket. The pin basket is placed in a common room, for example, the living room, and from there, the students can grab a pin and put it on their own door, see figure 4.7a. All the pins have a different form, they are all unique. When having done a food swap, they can put a pin on their door and collect the different pins, figure 4.7b. Roommates can see the progress of each other by looking at their doors, how many, and what shape of pins does someone have on their door, figure 4.7c. Below the holes for the pins is the whiteboard section, where students can write ideas, recipes, or motivational things on it. They can write also on the doors of their roommates, figure 4.7d.

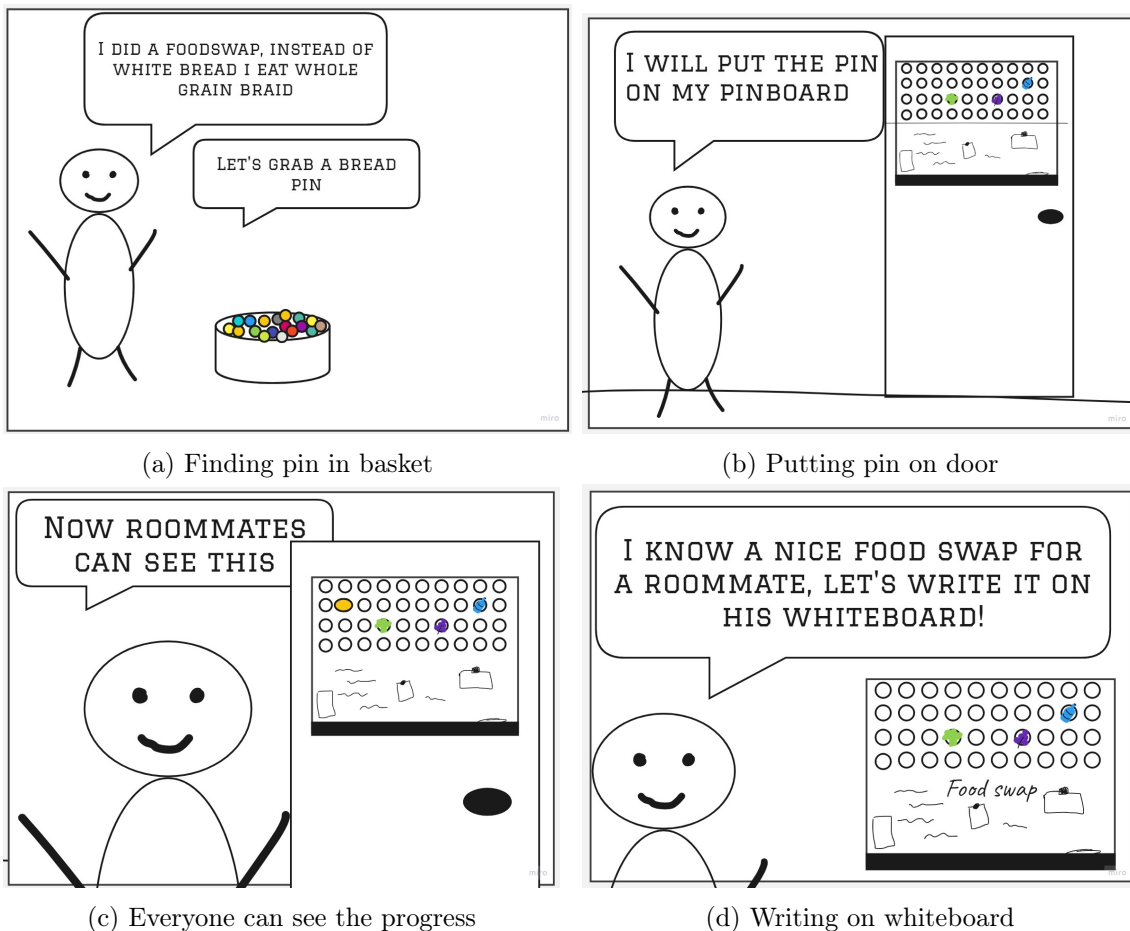


Figure 4.7: Storyboard CrocsWhiteboard

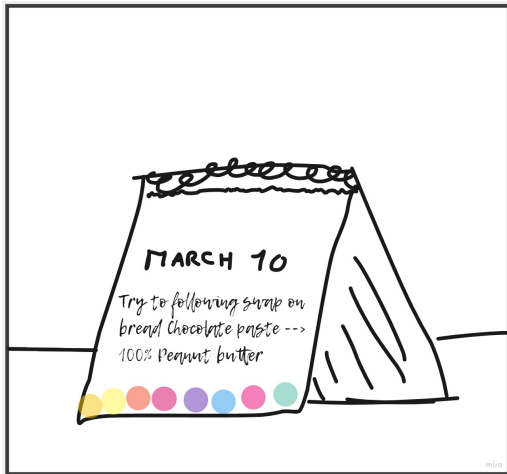
Third renewed idea, LightCalendar.

This idea is a combination of the calendar, A4 and binder, and the light cord checkboxmachine idea. During the interviews, participants were enthusiastic about the idea towards turning on lights when completing a food swap. This motivated the interviewees to keep making a food swaps. Furthermore, they were enthusiastic about monitoring their progress and being able to see the achievement of their roommates. It felt like something rewarding. Nevertheless, the light cord checkboxmachine idea lacked at the element of giving inspiration for different food swaps, which was something that the calendar idea was successful in. From the peer interviews in Chapter 2.6, it became clear that the interviewees desired

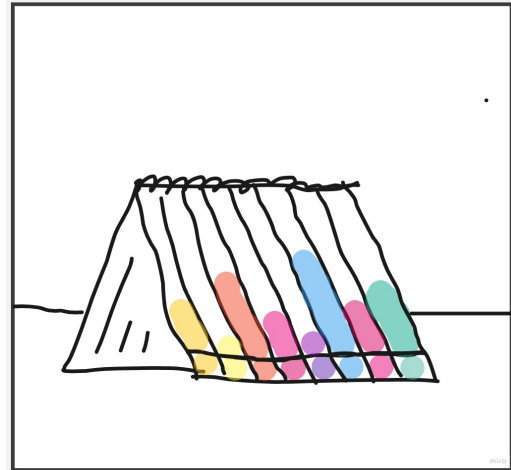
inspiration to be part of the tangible device. When combining these two ideas, the light cord checkboxmachine and the calendar, it ensures that the students will feel motivated and that they are getting inspiration for making different food swaps. Furthermore, the binder component of the A4 and binder idea received positive feedback. The interviewees appreciated that the binder contained all the previous inspiration given and that nothing went lost. Additionally, it allowed them to flip through the binder whenever they desired inspiration and ideas. By combining these three elements of those three different ideas, the new concept will have motivating, inspirational, and practical aspects. This will have to ensure that the students maintain motivated and inspired during the journey of making food swaps.

Figure 4.8a shows the front view of the renewed tear-off calendar, which can stand on any table in a common room. The tear-off pages contain written facts, recipes, food swap snacks, quotes, or other inspirational content related to the food swap. At the beginning of each day one page can be torn off and then put in the corresponding binder, as depicted in figure 4.8d. This will ensure that recipes, facts, or inspiration written on the pages will not be lost, but will be preserved in the binder. This allows students to look whenever they want in the binder for getting more inspiration. Additionally, when the students are not at home for a few days, they can look back in the binder to see the previous inspiration content.

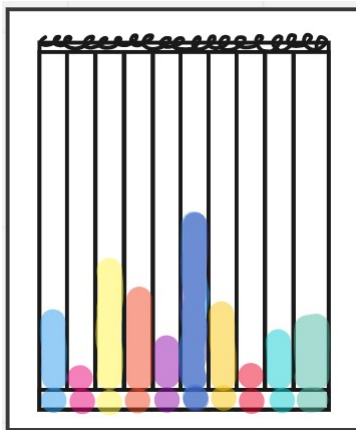
In figure 4.8c, the backside of the calendar reveals an integrated lighting system. This feature lets the students easily track how many food swaps are already made by themselves and their housemates. Multiple buttons are placed on the lower side of the front side of the calendar, as seen in figure 4.8a. each student in the house has their own unique coloured button. These buttons are connected to the back of the calendar, where the individual columns are displayed which keeps track of the progress. When pressing the corresponding button on the front, the colour in the corresponding column will rise. Additionally, there is a reset button. The intention is that once every month the progress is reset, such that everyone starts from zero again.



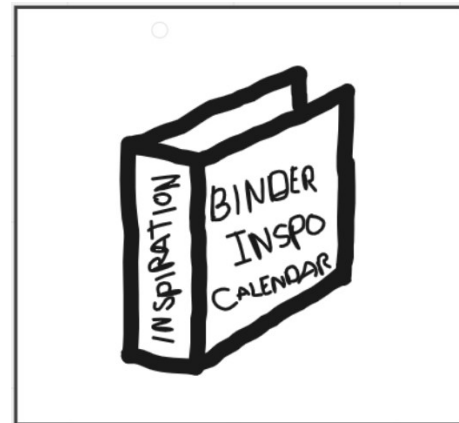
(a) Front view calendar



(b) Back view calendar



(c) Back of the calendar
2



(d) Binder

Figure 4.8: LightCalendar

The rules of using the LightCalendar.

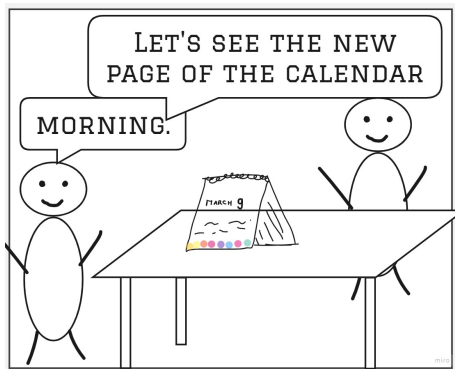
When having done a food swap, the student can press their own coloured button. A food swap can be made during dinner, lunch, or as a snack. When eating together with every housemate and a food swap is used during dinner, everybody can press their button, because everyone eats the food swap. Apart from this, people can also make food swaps during breakfast or lunch. For example, a student replaced chocolate paste with 100 per cent peanut butter. When using the peanut butter for the first time, the student can press the button once. When using the same jar of peanut butter another time, the student can not press the button again. When purchasing a new jar of peanut butter when the old one is empty, the student is allowed to press the button again when using the new jar for the first time. This process can be repeated as long as the peanut butter is not your new normal. When the new product has become your new normal it will not be considered a food swap anymore. This transition is on one own judgement. The same guidelines apply to other food and drinks.

Scenario and storyboard: LigthCalendar

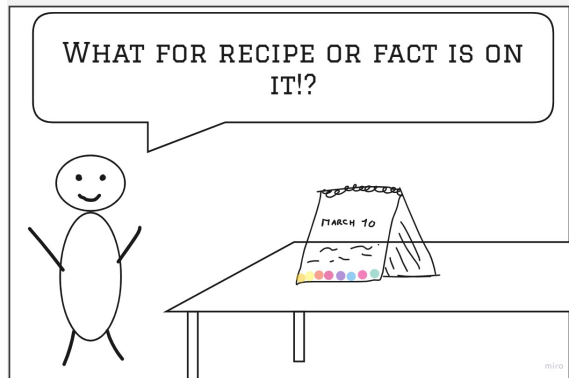
When a roommate enters the room in the morning they will see the calendar and will tear off the page 4.9a, they will read what is written on the new page, see figures 4.9b and 4.9c and put the old calendar page in the binder 4.9d. The other students living in the house will see the new page when they enter the common room. Furthermore, when having made

a food swap, see figure 4.9e you can click on your colour and can immediately see that the corresponding colour on the graph increases, see figures 4.9f and 4.9g. The students can see the progress of their peers.

The system on the back can be reset. It is intended that at the start of the month, the system will be reset and everyone will start at zero again, see figure 4.9h.



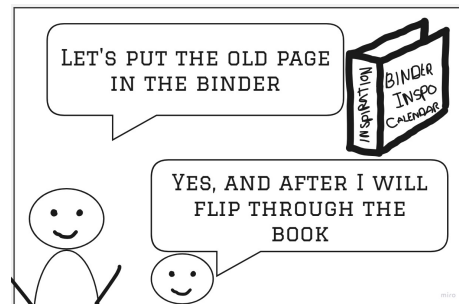
(a) Tearing off a page



(b) Seeing new recipe



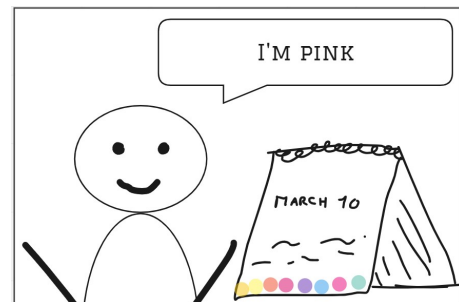
(c) Commenting on the new page



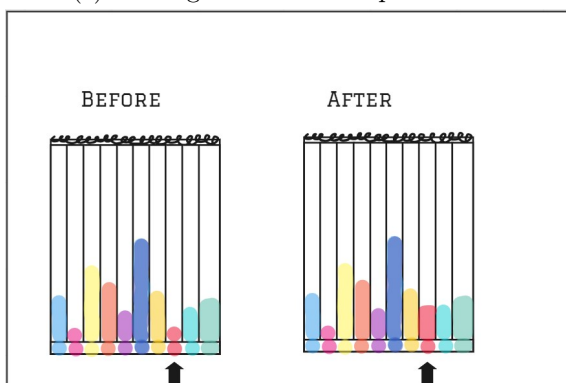
(d) Putting the old page in binder



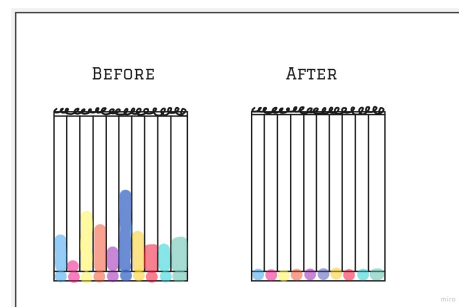
(e) Making a new foodswap



(f) Clicking on the right colour



(g) Color pink is getting higher



(h) Calendar getting reset

Figure 4.9: storyboard LightCalendar

Fourth renewed idea, KeyCam.

The photo frame idea received positive feedback regarding its social aspect and its inspiration aspect. The interviewees liked that you could see what roommates send in for photos. However, the downside of the photo frame was that people would not effectively be reminded for food swaps. On the contrary, the idea that received positive feedback for the ability to act as a reminder, was the idea keychain, Therefore, combining these ideas is considered beneficial.

The idea: each student in a student home has a keychain, and all the keychains are interconnected. The front of the keychain features a small screen see figure 4.10a, while the back is equipped with a camera that enables users to take photos, see figure 4.10b. The intention is that students will take photos of the food swap they make, the picture taken will be automatically sent to all the other keychains to which he is connected. Sharing and seeing the food swaps made by roommates can generate inspiration. There are no limitations on how many pictures can be taken. It is only possible to see one picture on the front of the keychain at a time. However, if two individuals coincidentally take photos simultaneously, the photos will be merged in a collage format, allowing both images to be visible. When someone takes a new picture, the last picture on the keychain will disappear and the new picture will be displayed.

The keychain can be hung with all other keychains, but you are also able to attach the keychain to your pants or backpack, which provides flexibility in its usage.

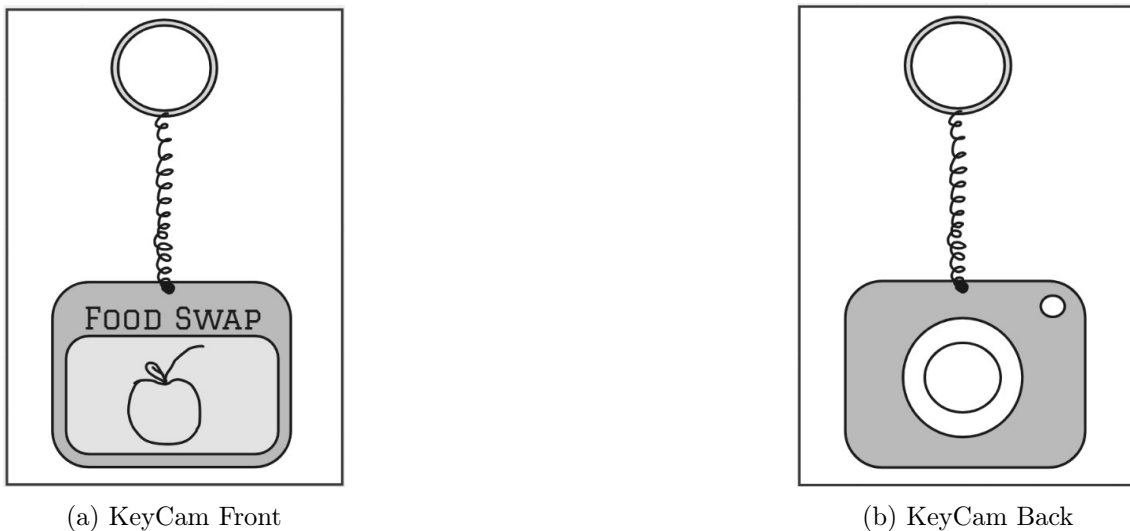


Figure 4.10: Front and back KeyCam

Storyboard and scenario: KeyCam

In figure 4.11a is seen that a student is making a food swap and in figure 4.11b he is making a photo of the swap. In figure 4.11c is seen that his housemates are seeing the photo on the keychain.

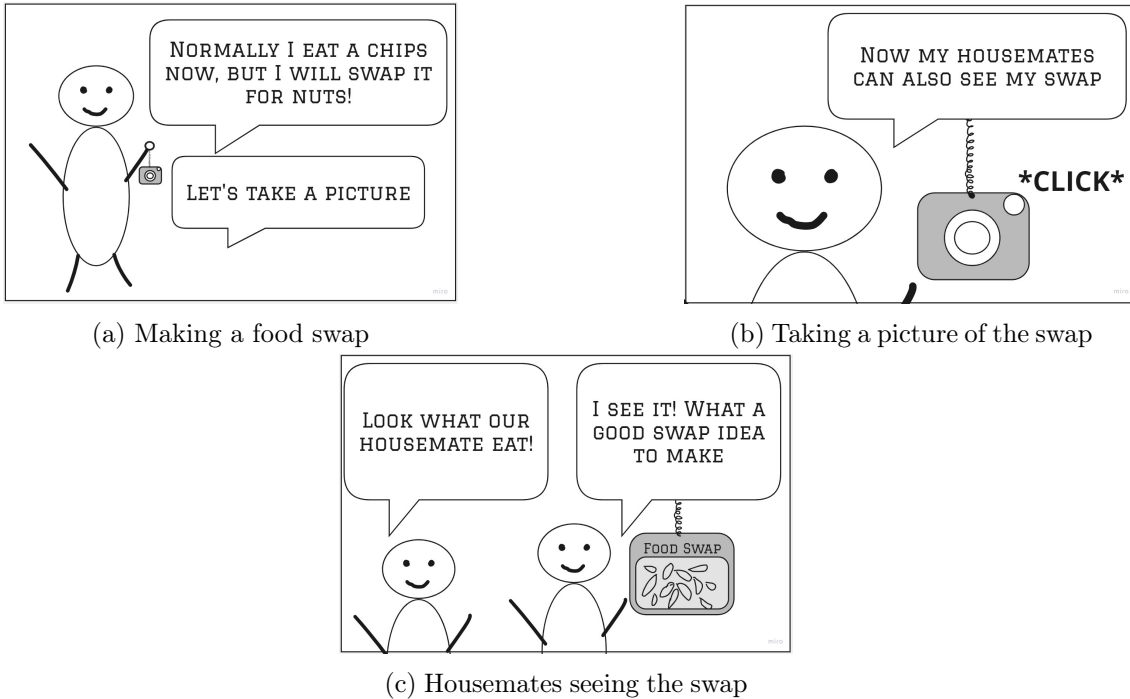


Figure 4.11: KeyCam

Fifth renewed idea five, CanvasBag

Canvas grocery shopping bag. The combination of the grocery shopping bag and the planner did not receive the best feedback. Some of the interviewees did not like the planning part. Some indicated that they were not good at planning and would therefore not use that aspect of the idea. Without the planning part, the grocery shopping bag has little social connectedness and/or support with it. The whiteboard/memoboard had also some limitations, but one of the positive parts of the idea was that it has a lot of social connectedness and support. Combining the better parts of both ideas will become the new idea of a canvas grocery shopping bag.

The CanvasBag will have a blank canvas, similar to a whiteboard. Students will be able to write down the food swap they have bought in the supermarket. Additionally, it will include fixed printed ideas and inspiration for food swaps on the CanvasBag. This will give a start in the process of writing food swaps down and give initial inspiration. The students will be able to write with a permanent marker directly on the bag. A permanent marker, because if not a permanent marker is used, all the suggestions will be able to be easily removed, also when the bag will accidentally hits something, the inscription will not be lost.

The CanvasBag will be used by whole the student house. When using the CanvasBag, the students will see what their roommates have thought of for food swaps. Figure 4.12 provides an example of what a CanvasBag could look like. The CanvasBag will be placed in a common room, such that it is easily accessible for every student in the house.

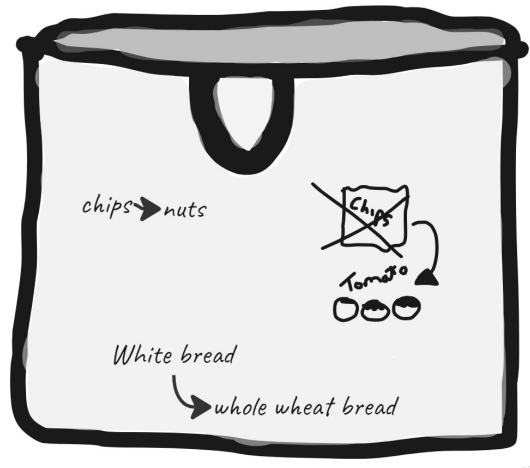


Figure 4.12: CanvasBag

4.2 Second round interviews about the five last concepts

New interviews will be held with the target group to evaluate the five last ideas. The interviews will be done in the house of the interviewee, or in the building of The University of Twente.

To gather enough information and feedback, ten different people will be interviewed, two of them have already been interviewed in the previous interviewing round, and the other eight have no background knowledge about the ideas.

The duration of each interview will be approximately 45 minutes per person. To minimize potential bias, the order in which the five different concepts are presented will be asked in a different order to the participants. This is done because the order of the concepts might influence the responses of the interviewees, the participants may experience fatigue which can lead to less precise answers. While explaining the concepts, each interviewee will be provided with a printed page with drawings of the concepts and a short storyboard, which can be found in Chapter 4.1.1. This allows the interviewees to refer back to the different ideas and review the information given when answering the questions.

When conducting the interview first, the interviewee will receive background information, including an overview of the project, its purpose and objectives. This ensures that all the interviewees understand what the project is about. Once the information is been provided, the interviewees will be asked to sign the consent form before the interview begins. Finally, when finished with the interview, the interviewees will have the opportunity to provide additional comments or ask any further questions. The questions of the interview asked are found in the appendix.

4.2.1 Analyzing

After the interviews, they are analyzed and evaluated.

Table 4.3 presents the different scores of the five concepts in descending order. During the interviews, interviewees were asked to rate each idea on a scale of 1 to 10, with 10 being the concept is amazing and 1 meaning that they strongly dislike the idea. In table 4.4 the mean and the standard deviation is presented. Analysis of the standard deviation for the different concepts reveals that the HouseCookBook and the LightCalendar have a

standard deviation under 1, meaning that the scores given are clustered around the mean. The other three ideas have a standard deviation which is above 2, meaning that the scores given are more spread out.

Idea	Score
HouseCookBook	7.9
LightCalendar	7.4
CanvasBag	6.4
CrocsWhiteboard	6.0
KeyCam	5.9

Table 4.3: Descending order final concepts

Idea	Minimum	Maximum	Mean	Std. Deviation
HouseCookBook	7.0	9.0	7.9	.69
KeyCam	2.3	8.5	5.9	2.27
LightCalendar	6.4	8.5	7.4	.66
CanvasBag	3.0	9.0	6.3	2.1
CrocsWhiteboard	1.1	8.2	6.0	2.1

Table 4.4: Descriptive values

Not only the scores given are important, but the perspectives of the interviewees regarding the five different concepts are also equally important. Table 4.5 provides an analysis of the positive factors and areas where the interviewees were less enthusiastic about. Alongside the feedback, the number of participants who specified specific positive or negative feedback of each concept is indicated behind each statement.

Idea	Plus	Minus
HouseCookBook	<ul style="list-style-type: none"> - Inspiration(7/10) - Write down own ideas (7/10) - Social connectedness/support (10/10) - Motivation (7/10) 	<ul style="list-style-type: none"> - High threshold to write in it (2/10) - Forgetting to use(2/10)
LightCalendar	<ul style="list-style-type: none"> - The facts written on the pages (4/10) - Competition (5/10) - Social connectedness/support (8/10) - Motivation (8/10) 	<ul style="list-style-type: none"> - Not sustainable (2/10) - Lights not representative (4/10)
CanvasBag	<ul style="list-style-type: none"> - Social connectedness/support (4/10) - Motivation (3/10) 	<ul style="list-style-type: none"> - Not much beginning inspiration (3/10)
CrocsWhiteboard	<ul style="list-style-type: none"> - Giving inspiration/ suggestions (5/10) - Social connectedness/support (6/10) - Motivation (3/10) 	<ul style="list-style-type: none"> - Forgetting to use (5/10) - Other usage that for the food swap(3/10)
KeyCam	<ul style="list-style-type: none"> - Interactive (4/10) 	<ul style="list-style-type: none"> - Other usage than the food swap(4/10)

<ul style="list-style-type: none"> - Social connectedness/ support (4/10) - Motivation (8/10) 	<ul style="list-style-type: none"> - Not getting enough inspiration (4/10)
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Table 4.5: Analyze of the final concepts

4.2.2 Reflection on last five ideas

During the interviews, there is gathered information about the five different concepts. The information gave insight into what could be improved in the ideas.

HouseCookbook

A common theme that emerged from several interviewees was that they would like a page included at the back of the book that provides a list of different food swaps. When incorporating this, students can easily reference the book also when wanting to make a food swap in an existing recipe found on the internet. This list will help them with inspiration for healthier alternatives for specific ingredients.

LightCalendar

During the interviews, it became clear that the meaning of the lightsystem on the back of the calendar is questionable. The current system does not account for individuals who already consume predominantly healthy food and thus not perform many food swaps. Additionally, the system may be contradictory, as individuals who already are eating healthy do not receive a reward from the system. It gives only rewards if a person performs a food swap, so it is not per se an indication of how healthy an individual is, only how many food swaps someone has done. Ans individuals who perform fewer food swaps because they already eat a lot of healthy foods may find this disturbing from the concept.

To address this issue, an improvement could involve letting individuals set their own personalized goals. Each individual should have the freedom to establish their own goal rather than having one communal goal of maximizing food swaps. This aligns with findings from the literature, which emphasise the importance of having personalized goals, particularly focusing on the process goals. Implementing this aspect would provide a clearer sense of progress and achievement.

Lastly, what was mentioned during the interviews was that it is not very sustainable to buy every year a new LightCalendar with all the new technology. So a solution would be that the lightsystem can remain every year and that it is possible to change the calendar yearly without having to destroy the whole lightsystem.

CrocsWhiteboard

It became clear during the interviews that there is a high likelihood that the whiteboard section of the CrocsWhiteboard will be utilized for purposes that are not food swap related. Students may write funny jokes on the board or fun little drawings, which is not necessarily the goal of the whiteboard section. Additionally, it is important to consider that not all students in a student house have their room on the same floor level. Interviewees found themselves not often walking past every housemate's door on different levels and found it much effort to walk past every housemate's door just to leave a message related to the food swap.

Similarly, the same problem as with the lightsystem of the LightCalendar arose, the current representation of the pins may not be an accurate measurement of how healthy a student is. People may perceive that having more pins indicates a better health status and

fewer pins could be interpreted as a poorer performance when compared to their housemates. It is important to develop a system that allows the pins to represent a goal for each individual student.

KeyCam

Some interviewees were concerned about the feasibility of this product. The required technology which has to be implemented can be expensive, which may lead to a potentially costly device. However, a goal of the project was to create a tangible device that is accessible to everyone, which means that the price should be reasonable to ensure it is affordable to anyone.

Additionally, the intended size of the KeyCam is to be the size of a keychain. This limits the size of the screen and may provide challenges in terms of accurately viewing the displayed photo and identifying the specific food item. Moreover, interviewees expressed that they would maybe use the device also for other purposes, unrelated to the food swap. Users would capture funny pictures with friends, or other images.

Another aspect is that there is a lack of inspiration regarding which food swaps can be done. Individuals must brainstorm themselves for possible food swaps to use, which can be challenging without suggestions.

CanvasBag

Interviewees expressed their concern about not getting enough initial inspiration for food swap ideas, as there are just a few food swap ideas on the bag. Students may not have the knowledge of what kind of food swaps they could make, which makes it a challenge to determine what to purchase in the supermarket. Furthermore, there is a concern that the CanvasBag would also be used for other purposes than only its intended usage. Students would maybe write nonsense or jokes or drawings on the bag which have nothing to do with the food swap.

Moreover, not all students necessarily travel from home to the supermarket, some students may go from the university or make spontaneous trips from other locations to the supermarket. This means that they may not make use of the CanvasBag when doing groceries. Additionally, students may forget to bring along the CanvasBag when doing groceries from home.

Chapter 5

Discussion and future work

The research question was: “In what way can an interactive device be designed to generate social connectedness and support by students to maintain making food swaps?”

There are multiple elements that are relevant to incorporate in an interactive design for students that helps with generating social connectedness and support to maintain making food swaps.

When evaluating the two designs which scored significantly higher than the other three designs, with at minimum of one whole point difference is seen that the requirements of social connectedness and social support scored very high. Beforehand, social connectedness and support were already seen as important requirements, in the state of the art they are for example also a big element in the Fitbit. For the HousCookbook, ten out of ten felt the social connectedness/support and 8 out of ten by the LightCalendar concept. People did not feel much social connectedness or support from the designs which scored relatively low.

There is not one right way to generate social connectedness or support (for Disease Control & Prevention, 2023). How social connectedness and support is generated with the HouseCookbook is by facilitating shared and common interests and giving the individuals the opportunity to discuss to each other about the recipes, because their name is included on the pages (Bel et al., 2009). Furthermore, where a device is placed can generate social connectedness or support, when placed in a common/shared room it can serve as a conversation starter for example. In the case of the HouseCookbook its placed in a shared room where everybody can just grab the book whether alone or together. When engaging in conversation it will be recognized as a valuable contribution to social connectedness (Ostrowski et al., 2019). Additionally, it will create support from the environment surrounding which will result in motivational change, as described in the self-determination theory. The support received, enhances internal motivation towards activities such as preparing food that incorporates the suggested food swap. Furthermore, the HouseCookbook gives informational support, which is a component of social support, by serving information about food swaps (Frieling et al., 2018).

How the LightCalendar generates social connectedness and/or support is among other things through competition. People felt a competition factor which generated social connectedness. Trying to have a higher column than their housemates. Additionally, this feeling also enhances the motivation and performance of the students, which aligns with what is found in the literature (Gómez-Miñambres, 2012). In the beginning, I thought that goal setting could have an influence on the motivation of the students, in the state of the art goal setting played a role in the Fitbit and Mijn Eetmeter, and in the literature found it also enhances the motivation. When looking at the results from the concept, not all ideas

that incorporate goal setting ended up high. This can be because social comparison should be a factor in goal setting, it can increase the motivation of students to work toward their goal (Zhang et al., 2016). Interviewees liked when they had the idea of competition and comparison because it let them feel that they have a goal to work towards which is really motivating and promoted also social connectedness. The LightCalendar incorporates this aspect well and the CrocsWhiteboard which also incorporates goal setting has less comparison and ended up lower. Another explanation could be that not all people would want competition when it is regarding healthy eating behaviour, this was said by an interviewee during the interviews as feedback. When having a competition regarding healthy eating, individuals have different needs, which can be difficult to measure when having one goal for everyone. Individuals should have a personalized goal to focus on, this is also found in the literature (Clear, 2021). So, the element of goal setting is not a necessity when designing an interactive design to generate social connectedness and support by students to maintain making food swaps.

Furthermore, the element of inspiration turned out to be also a big factor in designing such an interactive device. At first, I did not think that the requirement inspiration had such a big influence on the students, in the state-of-the-art and the literature research the element of inspiration was not really present, but it turned out to be a big deal-breaker when the design did not have or had little inspiration for what kind of food swaps were possible. This is very clearly seen in the results of the five final ideas. The ideas that ended up low do not incorporate much inspiration. This can be explained by that students themselves do not have much knowledge about what kind of food swaps already exist, and what they could do better nutrition-wise. It is possible that students' knowledge about nutrition is an obstacle to changing their eating behaviour (Abraham et al., 2018). Without the element of inspiration, a lot of the students did not know where they could start with making food swaps. In the HousCookbook, the element of inspiration does also generate social connectedness and support, because students write their name in the book when putting in a recipe, and everyone flipping through the book sees who wrote what down and that gives a sense of connection.

Additionally, with the element of inspiration, students also got motivated to make food swaps, because when seeing that something relatively small can be changed to get a healthier and balanced diet, it motivates them to make more. When noticing that it is not much effort to make a small food swap it gives them motivation to make more swaps because they see that it does not cost as much of an effort as maybe previously thought.

From the literature research (Blotnick et al., 2015) awareness seemed also to be a big factor that contributed to unhealthy eating behaviours. In the state of the art, the neckless and Mijn Eetmeter incorporate a lot of awareness. What I found is that awareness plays a role, but it is more in the background. Which is also seen in the results. The HouseCookbook creates awareness by having the pre-made pages with the recipes written in it why a certain food swap is beneficial and in the LightCalendar it is incorporated into little facts that are written on the tear-off pages. I think that awareness should be an element, but it should be combined with other elements.

In order to let students feel motivated to maintain making food swaps, besides deriving motivation from inspiration, is by the two highest ideas done in a similar approach. Both incorporate renewal in their design. The LightCalendar introduces every day with a new fact/recipe on the tear-off page which gives inspiration. Similarly, the HouseCookbook will be renewed by recipes the students come up with and there are also already recipes in it for inspiration. The reason why the CanvasBag and the CrocsWhiteboard did not

score very high can be because students must generate their own inspiration to write down which cost a lot of effort, there is not much inspiration coming from the device itself.

5.1 Limitations

One limitation was that the interviews were only conducted with students residing and studying in Enschede. This is a limited sample, furthermore, the students interviewed were confined to my circle and surroundings. It is important to note that the living situation for students in other cities can be different. This may potentially influence the outcomes of answers given during the interviews.

There are a lot of different scenarios for students, with some students dining alone while others always sharing a meal with their housemates. Student hoses can vary, from 10 or more people to smaller houses with up to 5 people. These factors can influence how students perceive the tangible device and the responses given during the interviews. The last limitation is that during the interviews, it became clear that students do not like to spend a big amount of money towards groceries, although this may be different for individuals who are not students.

5.2 Future work

For future work, it should be investigated how different students' house sizes perceive the tangible device, and students from other cities look at the idea of incorporating a tangible device in their homes.

Additionally, for future work, it would be valuable to realize the final design into a physical object and test it by the target group. The feedback from the target group after testing the product should allow for revising the tangible device and making improvements. Ideally, the tangible device should be tested and refined multiple times.

The device should be tested in different cross different dimensions, including how much the tangible device motivates the users, gives inspiration, social connectedness/ support, does it generate awareness and/or goal setting. Moreover, the tangible device should be tested not only for a short period of usage, but it is essential to assess the long-term effects of using the tangible device. This evaluation should involve students with varying living situations.

Furthermore, it is crucial to investigate if the tangible device has any potential negative impacts on the users. It is important to ensure that the tangible device does not trigger any eating obsessions or disorders or give any other unintended consequences. This is especially important because those outcomes would be conflicting with the intended goals of the project. Additionally, the effect the tangible device has on the environment should also be examined. While promoting healthy food is in general beneficial for individuals, it is important to consider the sustainability aspects. An example is that avocados are considered a superfood, but they are bad for the environment, and thus not at all sustainable. Thus, the extent to which we should promote healthy food swaps yet sustainable should also be carefully considered.

Lastly, it is interesting to investigate if the final tangible device is also appreciated by individuals who are not students. Will the tangible device also help other people with maintaining motivation to keep doing the food swap and will it just like students generate

social connectedness or support? Is the tangible device also deployable in other situations than for student houses?

Chapter 6

Conclusion

To conclude, an interactive design should be made which incorporates the elements of inspiration, social connectedness and/or support, and people should feel motivated to perform the food swap. The element of awareness is also something that should be incorporated into the device but in a subtle manner.

How to generate the feeling of social connectedness and support can be done in various ways, there is not one right answer. It can be done by giving the individuals the chance to talk to each other, facilitating shared and common interests, or giving the students a feeling of competition.

To let students feel motivated and to maintain making food swaps is mostly done through renewal, goal setting, and inspiration.

By considering and implementing the importance of these elements, the interactive tangible device should have a positive effect on the overall well-being and health of students which can be maintained in the long-term.

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Appendix A

Appendix

Expertinterview questions:

1. Wat is de eetwissel precies?
2. Voor wie is de eetwissel?
3. Waarom is de eetwissel verzonnen?
 - a. Wat zijn de redenen van het ontstaan van de eetwissel?
 - b. Wat is het doel van de eetwissel?
 - i. Is er bewijs dat de eetwissel effectief is in zijn doel?
4. Hoe worden de eetwissels besloten?
5. Hoe kan de eetwissel ervoor zorgen mensen gezondere eet keuzes te maken?
6. Is de eetwissel ook toepasbaar op mensen met een specifiek dieet? (vegan, vegetarisch, allergieën)
 - a. Ja, hoe wordt hier rekening mee gehouden?
7. Hoe wordt ervoor gezorgd dat mensen te weten komen van de eetwissel?
 - a. Gaan jullie ervan uit dat mensen dit aan elkaar vertellen?
 - b. Dat de sociale kringen elkaar motiveren voor de eetwissel en er mee bezig mee zijn
8. Hoeveel eetwissels zou men moeten maken of is één eetwissel al genoeg om effectief te zijn?
9. Zou het handig zijn als mensen gecoacht zouden worden tijdens het maken van de eetwissels?
10. Hoe verhoudt de eetwissel zich ten opzichte van andere dieetprogramma's en/of interventies?
 - a. Is er eetwissel effectiever dan een ander dieet?
 - i. Zijn hier onderzoeken naar gedaan?
11. Zijn er beperkingen van de eetwissel?
12. Wanneer wordt de eetwissel als succes beschouwt?
 - a. Wanneer het een gewoonte is geworden en je altijd die eetwissel maakt? Dat het het nieuwe normaal is.

Interview questions peers:

1. What kind of feedback would you want to receive during 'de eetwissel'?
2. Would you like to receive real feedback from other people, or would it be enough if you knew that people are thinking of you or doing 'de eetwissel' with you?
3. What do you need of other people while doing 'de eetwissel'?
4. Would you want to discuss before starting with 'de eetwissel' all the options with your student house and what you would like to accomplish?
 - a. Options -> What kind of 'eetwissels' are out there?
5. Would you want to have a tangible device, or would it be better if the tangible device is something to give through?

6. Would having goals and objectives help in maintaining motivation for 'de eetwissel'?
7. How much do you know about nutrition?
8. How often do you eat 'unhealthy' food?
9. What motivates you?
10. Do you think it is important to have a healthy diet?
11. Do you buy food based on money?

Interview questions over the 24 different ideas with students:

1. What are your first thoughts on this concept?
2. How much do you like this idea?
3. Would you use this product?
4. Will this device motivate you to make the food swap?
5. And keep making the food swap, also after some time.
6. Does this device gives you social connectedness or social support?
7. What in this concept would you want to change?

<u>concept</u>	<u>uitleg</u>
1. Sleutelhanger	Sleutelhanger kan je ergens aan hangen, de sleutelhanger heb je overdag bij je wat je helpt herinneren aan het maken van de eetwissels. En wanneer je thuiskomt kan je hem aan een soort sleutelhangerkapstok hangen, waar iedereen die <u>er aan</u> meedoet dat ook kan doen wat zo voor een gesprek kan zorgen en je ziet dat anderen er ook mee bezig zijn.
2. Telefoonhoesje	Op het telefoonhoesje zouden bijv. verschillen ideeën over de eetwissel te zien zijn. Van elke etensgroep, wat er 5 zijn staat een ideetje op het hoesje. Er zijn verschillende soorten hoesjes met verschillende wissels erop. Dit helpt je inspireren. Je kan hoesjes wisselen.
3. Armband	Iedereen die meedoet aan de eetwissel krijgt zo'n armband die dan connected zijn. En dan kan je bijv. ervoor laten zorgen dat bij een ander de armband oplicht. Of de armband vibreert soms gedurende dag om iemand te laten herinneren.
4. Ophangstelsel	Een systeem waarbij iets, een stokje, aan kan ophangen wanneer diegene een eetwissel heeft gemaakt. En het systeem gaat door het gewicht naar beneden zakken. Als die de 'grond' raakt, wat een knopje zou kunnen zijn, dan is het doel bereikt en gaat er een lampje branden. Je moet dan bijvoorbeeld 3 stokjes er aanhangen, voordat die het knopje raakt. Wanneer het doel is bereikt geef je de stokjes door aan iemand anders en die gaat dit ook doen, en wanneer hij dit heeft gedaan wordt het weer doorgegeven. Je zou dit 'stelsel' op een gezamenlijke plek kunnen neerzetten.
5. Ring	Iedereen die <u>mee doet</u> aan de eetwissel krijgt zo'n ring die dan connected zijn. En dan kan je bijv. ervoor laten zorgen dat bij een ander de armband oplicht. Of je kan je eigen emotie doorsturen naar iemand anders
6. (Boodschappen)tas	Bijv. met suggesties op de buitenkant voor elke voedselgroep, welke wissel je zou kunnen maken
7. A4'tje	Er hangt ergens een A4'tje in een gemeenschappelijke ruimte waarop mensen bemoedige dingen kunnen schrijven dit A4'tje wissel je elke week, en de 'oude' stop je in een binder, die je altijd kan pakken om er doorheen te bladeren. Op het A4'tje kan je ook ideeën schrijven.
8. Puntensysteem	Er is een puntensysteem, wat je in groep kan doen. Je kan punten behalen met het maken van de eetwissel. Iedereen meot er dan minstens wel bijv. 2 en dan als je er 20 of meer hebt dan krijg je een 'beloning'
9. Ballon	Elke kluur ballon staat voor een bepaalde eetwisselgroep en je moet er bijv. 5 verzamelen
10. Lichtslinger	Er hangt een slinger met lampjes in de woonkamer en als iemand een eetwissel maakt kan hij een lampje aanzetten. Zo probeer je de hele slinger aan te krijgen gedurende de dag. Aan het einde van de dag kan je tijdens het avondeten bespreken wie allemaal wissels heeft gemaakt en hoe het is gegaan, daarna gaan alle lampjes weer uit. En kan je het een andere dag weer doen.
11. Emmer/pot	Waarin bijv. iedereen gezonde eetwissels in kan doen die iedereen kan pakken voor inspiratie
12. Bord, prikboard/memoboord	Op dit bord kunnen mensen motiverende berichtjes hangen en kunnen ze inspiratie <u>opdoen kunnen</u> ze hun eigen eetwissels ophangen/schrijven. Wat de rest allemaal kan zien. Je zou ook je resultaten kunnen laten zien

13. Een blik	In de blik zitten vragen en die laten een gesprek beginnen over de eetwissel
14. (Kook)boek	In het kookboek zitten allemaal recepten die meedoen aan de eetwissel, dus bijv. als je pasta kookt i.p.v normale 'witte' pasta doen ze dat met <u>volkoren pasta</u> . Dit kookboek staat in de gezamenlijke keuken, zodat iedereen er makkelijk bij kan en <u>er in</u> kan bladeren en samen recepten kan uitzoeken om te eten in de avond.
15. <u>planner</u>	In de planner kan je opschrijven op welke dagen je welke eetwissels maakt. Je kan dan dit doen samen met anderen
16. Checkboxmachine	Dat je aan de einde v/d dag alle lampjes aan staan. Je hebt doelen en als je zo'n doel haalt dan gaat zo'n lampje aan en dan komt er een leuk vormpje uit wat je dan ziet. Nadat je dit doel hebt bereikt kan je weer door met een ander doel (of dezelfde nog een keer) dit zou gecombineerd kunnen worden met het idee van de lichtslinger, dus je doet dit gezamenlijk met je huisgenoten. En maakt samen een figuur.
17. Ketting	Iedereen die <u>mee doet</u> aan de eetwissel krijgt zo'n ketting die dan connected zijn. En dan kan je bijv. ervoor laten zorgen dat bij een ander de ketting oplicht. Of weten dat je aan de ander persoon denkt
18. Voedselscanner	Met de scanner kan je voedsel scannen en dan ook de 'swap' en dan laat die je zien hoeveel beter die wissel is t.o.v. het origineel.
19. Voedselbox	In deze voedselbox zitten allemaal producten om eten mee klaar te maken, en het eten wat erin zit zijn het meeste op de 'eetwissel' gebaseerd.
20. <u>magneet</u>	Op deze magneet staan eetwissels
21. Labels	Eten is gelabeld, wat is gelabeld wisselen
22. Weegschaal	De weegschaal kan scannen wat erop ligt en heeft suggesties voor een wissel
23. Container	Gekleurcodes die in lijn staan met de eetwissel
24. Kaartspel	Bijv. Met food swaps
25. Horloge	Kan herrinerings geven aan de gebruiker, of kan je voortgang weergeven
26. Boodschappenlijst	Wat je miss ook zou kunnen uitwisselen of een groepsboodschappenlijst
27. Snack dispenser	Komen gezonde eetwissels uit
28. Kalender	Op de kalender staat op elke dag een andere wissel die je kan maken. Kan samen met huisgenoten een gezamenlijke kalender zijn
29. Puzzel	De puzzel kan je samen maken er komt dan een figuur uit die te maken heeft met de eetwissel
30. Bord	Het bord kan detecteren wat voor eten der op ligt en kan aan de hand van dat inspiratie geven over wat je zou kunnen wisselen de volgende keer
31. Koelkast	Deze 'smart' koelkast kan alternatieven eetwissels geven.
32. Food swap kit	Een kit met verschillende food swaps derin. Inspiratiebox
33. Memory	Foodswap memory
34. Bingo	Er zijn zoveel eetwissels die op een bepaalde bingokaart staan en als je hem vol hebt, heb je bingo en dan krijg je iets. Dit doe je met huisgenootjes. En dan wanneer iemand bingo heeft, is er een nieuwe bingokaart met ook andere wissels erin.
35. Infographic	Een mooie infographic die mensen eetwissels laat zien en de effecten die het zou kunnen hebben
36. Nieuwsbrief	Elke week of maand krijg je zo'n brief en daar staan ideeën in en/of <u>ervaringen</u> van andere mensen. Mensen kunnen dan ook dingen insturen om elkaar te motiveren. Je kan het samen lezen, zo wordt het een gespreksonderwerp ook.

37. Kunst	Creatieve kunst wat gezond eten promoot, de eetwissels end at motiverend is voor een <u>gezondere</u> leefstijl.
38. Magazine	In <u>de magazine</u> staan recepten en ideeën en verhalen in.
39. Timer	Dat motiverende berichten stuurt om een bepaalde tijd wnr de timer op is
40. Competitie/	Een soort wedstrijd wat je met je huisgenootjes houdt wat te maken heeft met de eetwissel
41. Binder	Met wissels erin en tips en resources
42. Draaibord	Als je aan het bord draait komt de wijzer ergens op uit, bijv een product en die moet je dan veranderen die week. En dit doe je dan elke week samen met je huisgenootjes
43. Grabbelton	In deze grabbelton zit inspiratie van welke eetwissels je kan makne. Of er staat in welke eetwissel je moet proberen.
44. Stok	Doorgeefstokje, als je het stokje hebt moet je minstens 1 eetwissel maken en dan <u>geef je hem weer door aan de volgende</u>
45. Doorgeefboekje	Waarin je je wissel kan inzetten en die kan doorgeven aan een ander persoon. Waar hij/zij ook dingen in kan schrijven ofzo
46. Motivatieposter	Op deze poster staan ideeën en motiverende quotes
47. Blieper	Iets wat je bij je kan houden wat blijft
48. Hanger	Wat bijv. tijdens het boodschappen licht afgeeft wat je herrinert aan de eetwissel
49. Groepsetenslijst	Een lijst met eten waarop mensen eetwissels kunnen zetten
50. Zweetbandje	Het zweetbandje is een herrinering aandaat je bezig bent met de eetwissel. Wie de zweetband om heeft die doen allemaal mee en kan je dus makkelijk een <u>gesprek mee beginnen over de eetwissel</u>
51. <u>Crocs</u>	Kan je va die dingetjes in die gaatjes doen, elke keer dat je een eetwissel hebt gemaakt. Zo probeer je je schoen helemaal vol te sparen. Dit doe je met je huisgenoten, iedereen heeft crocs en aan het einde v/d week kan je met elkaar gaan vergelijken hoeveel en wat voor wissels je hebt gemaakt. Die speldjes die je in de cros kan doen hebben allemaal verschillende vormpjes. Ze hebben vormpjes van verschillend soorten eten en de 5 etensgroepen.
52. Vriendenboekje	Iedereen die erin schrijft ervaring erin kan zetten en misschien motiverende dingen en dan <u>geef je hem weer terug</u> .
53. Pasje	Het pasje is iets wat je bijdraagt en je daarom herrinert aan het maken van de eetwissel
54. <u>microfoon</u>	De microfoon ligt op een tafel, wat voor een gesprek moet kunnen starten'over de eetwissel
55. Koekoeksklok	Als hij afgaat in de ruimte geeft het de mogelijkheid om herinnert te worden aan de eetwissel en geeft ruimte om er dan met de mensen die ook in die ruimte zijn er over te praten
56. Theepot/koffiepot	Kan bijv ook in ander vorm, giraffe bijv. dit zorgt voor het beginnen van en <u>gesprek over de eetwissel</u>
57. Kooi	Alles wat je wisselt doe je in de kooi, een kooi voor alle huisgenoten, aan het einde van de week ga je gezamenlijk de dingen bekijken die je hebt gewisselt en kan je vertellen waarom je dt product hebt gewisseld en wat voor wissel het was en of je de wissel vaker zou maken.
58. Fruitmand	Er staat een fruitmand met fruit/groente erin wat mensen <u>er uit</u> kunnen pakken.
59. Mandje	Zitten bijvoorbeeld goeie wissels in
60. Goeie pan	Altijd als je die pan gebruikt wissels maakt

61. Envelop	In de envelop kunnen mensen briefjes indoen waar ze bijv. motiverende dingen op kunnen schrijven die dan anderen kunnen lezen die ook meedoen aan de eetwissel.
62. Kastje	In het kastje staat allemaal eetwissels die je kan maken
63. Paperclip	De paperclip kan bijv labels bijhouden, op die labels staan eetwissels en als je er eentje maakt kan je hem aan de paperclip doen
64. Dobbelsteen	Op elke kant staan wissels, dus 6 wissels. Of bijv. twee lekkere dingen en 4 gezonde dingen. Dan kan je hem rollen (ook samen) en waarop die land <u>dat gene</u> moet je die dag/week doen
65. Streeplijst	Op de streeplijst zekt je een streepje als je een eetwissel hebt gemaakt, dit doe je met meerdere mensen. Zo kan je elkaar motiveren
66. Spaarpot	Als je een wissel maakt schrijf je die op en doe je in het potje en dan kan je later met huisgenoten na een week het potje openmaken en dan bespreken wat iedereen heeftgedaan en <u>waarom.w</u>
67. Chip	De chip kan je in je laptop doen en dan staan er daar ideeën op voor de eetwissel
68. Ducttaperol	Een soort rolwaarvan je dingen kan afscheuren waar ideeën voor eetwissels opstaan.
69. Glowstick	Elke keer dat je een eetwissel maakt krijg je een glowstick waarmee je uiteindelijk iets mee kan maken
70. Broodtrommel	Als je de broodtrommel gebruikt moet je die dag een eetwissel maken. De broodtrommel geef je door elke dag. op de broodtrommel zelf kunnen inspiratie dingen staan
71. Knuffel	(zou miss ook kunnen praten, als je erin knijpt) dit is motiverend
72. Vloeistof	Als je bijv. een emmer hebt. Als hij helemaal vol is met water dan heb je het doel bereikt. Je mag steeds water bijvoegen als je een eetwissel maakt
73. Monopoly	Als je kanskaart krijgt, moet je een bepaalde eetwissel doen
74. Metertje	Net zoals in een auto heb je een meterkastje en dan zie je de wijzer omhoog en/of <u>omlaag gaan</u> . Zo kan je je progressie zien, als die oomhoog gaat zit je goed met de wissels.
75. Tellertje	Houdt bij hoeveel eetwissels je hebt gemaakt in een week bijv.
76. Voedselverpakking	Staan eetwissel ideeën op
77. Stickers	Leuke stickers die je kan verzamelen van allemaal eetwissels
78. Adventkalender	In elk vakje staat een eetwissel die je kan doen die dag
79. (muziek)boxje	Op dit boxje kan je met z'n allen een eetwissel podcast luisteren en dan daarover praten
80. Beker/flesje	Op de fles staan inspiratie eetwissel op
81. Bril	Dat het eten laat 'veranderen' ER bril. Iemand die visueel de food swap doet voor jou
82. Radio	Die ipv weer/verkeer info geeft, voedsel info geeft
83. Vestje	Als je het vestje draagt moet je die dag een eetwissel maken, je geeft het vest door
84. Fotolijstje	In dit lijstje is een foto van eetwissels. Een fotolijstje <u>die</u> digitaal is en vanzelf doorgaat naar de volgende, hierdoor kan je inspiratie krijgen. Iedereen kan dingen opsturen die dan gedisplayed worden.
85. Tracker	Waarbij participanten hun goals kunnen volgen en hoe goed ze op weg zijn
86. Theevragen	Maar dan met de eetwissel
87. Whiteboard	Zelfde idee als het board hierboven
88. Onderzetters	Op elke onderzetter staat een eetwissel
89. Grafiek	Waarbij iedereen elke dag bijv. kan invullen hoe hij/zij het heeft gedaan
90. Teller	Hoeveel eetwissels je hebt gemaakt
91. Lunchbox	Waarbij je ook zou kunnen foodpreppen
92. Kleurcodes	Waarbij bijv. de gele kleur met oranje kan vervangen voor eetwissels

The 55 different ideas with explanation

1. hanging system and stick	A system where a stick, can be hang on when a person has made a food swap. The system goes down because of the weight of the stick. When it hits the "ground," which could be a button, then the goal is achieved and a light goes on. You have to attach, for example, 3 sticks to it before it hits the button. When the goal is reached you pass the sticks to someone else and they will do the same, and when they have done so it is passed on again. You could put this 'system' in a commonplace.
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2. A4 and Binder	There is an A4 sheet somewhere in a common room on which people can write encouraging things. This A4 sheet you change every week, and the "old" one you put in a binder, which you can always grab to flip through it. On the A4 you can also write ideas, swaps and resources.
3. Light cord and checkboxmachine	That at the end of the day you have all the lights on. Whenever you make a food swap, a light comes on and eventually a nice little shape comes out which you then see. After you've got the shape completely on, you and your housemates discuss how it went and which food swaps were made, and the figure is switched off again. You can do this again the next day. You turn on the lights together with your housemates.
4. Grocery shopping bag and shopping lists/eating list and planner	On the shopping bag there are suggestions of food swaps from the different 5 food groups you could make, it gives inspiration. This is combined with a shopping list and planner that you can create together with housemates, a group groceries list or pass on. With the planner, you could start deciding together on which days you could do which food swaps during communal dinner.
5. Phone case	On the phone case, for example, there would be different ideas about the food swap. Of each food group, of which there are 5, an idea is on the cover. There are different kinds of covers with different swaps on them. This will help inspire you. You can swap phone cases.
6. Keychain	Keychains that are the shape of a food swap that hang on a keychain rack near the door at home so you see it. If you see other people grabbing one or carrying one such keychain it can start a conversation. When you go to your parents' house, you can take one of such a keychain with you so that you are reminded to make eating changes there too, or when you go to the supermarket.
7. Jewellery	Everyone who participates in the food swap wears a piece of jewellery. This ornament can light up by someone else who is also participating in the eating swap. This can make people feel connected. You can ensure that the bracelet can only light up at certain times, so that it does not light up at inappropriate times.
8. Crocs	You can put little things in those holes every time you make a food swap. That way, you try to fill up your shoe completely. You do this with your housemates, everyone has Crocs that you can wear in the house. At the end of the week you can compare how many and what kind of changes food swaps you made. Those pins you can put in Crocs all have different shapes. They have shapes of different types of food and the 5 food groups.
9. Friends book or giving through book	People can put experiences/motivational things in the booklet or ideas for food swaps. This booklet is then given back to the relevant person and they can read it and give it again to someone else to write in it.

10. Whiteboard/memoboard	On this board, people can hang motivational messages and get inspiration. People can hang/write their own food swaps, which everyone else can see. You could also display your results. This board is hung in a common room
11. Newsletter/magazine	Every week or month, you get a newspaper/magazine and in it are ideas, recipes and stories and/or experiences of other people. People can then also send in things to motivate each other. You can read it together, so it becomes a topic of conversation too.
12. Pointsystem	A point system tracked by abacus, there are as many rows as roommates. Each housemate has a row. And whoever is first to move all his beads, which is allowed if you have made a food swap, gets a reward.
13. Balloon	The colours of the balloon represent the different eating change group. You can then hang the balloon on your door, so everyone can see how someone is doing. There is a bag of balloons in the house and you can take one out when you have made a food swap.
14. Tea/coffee can	The tea/coffee pot can take several forms. It stands in the common room next to the bucket/pot/can, it contains questions that can start a conversation about the food switch and people can also put in their own ideas for healthy food swaps. Everyone can access this bucket/pot/can at any time. And when coffee or tea is drunk, the pot is also taken out. The tea/coffee pot and the bucket/pot/can belong together, as you can see from the way they look.
15. cookbook	In the cookbook are all recipes that participate in the food switch, so e.g. if you cook pasta instead of normal 'white' pasta they do it with whole-wheat pasta. This cookbook is in the communal kitchen, so everyone can easily access it and leaf through it and pick recipes to eat together in the evening
16. Food scanner and scale	The scanner allows you to scan food, the barcode and what you want to swap it with. It then shows the differences between food items. If you put a product on the scale then it gives different suggestions for something you could swap it with, which you can then scan as well. The scale is in the dorm and you can take the scanner to the supermarket yourself.
17. Food box	The box/kit will be sent to you once a week for the whole dorm. In it are ideas for swaps you could make that week. It contains healthy products as well as ideas. A different theme every week. So that people stay inspired. You can open the box/kit together with all the housemates and immediately talk about what's in it and what kind of food swaps you could make that week.
18. Magnet	On this magnet are food swaps, you can collect those magnets and place them on students' home fridges
19. Labels	You can swap the coloured labels with another coloured label. So you can see right away which food item you would be good at swapping.
20. Container	You can personalise it all together so that the box has your needs. You can give it 5 different sizes of compartments for different food groups.

21. Games	Monopoly, Puzzle, Dice, Card game, Memory, Spinning board, Grab bag, Bingo
22. Watch	It can give reminders to the user and display progress. It also has an online platform through which you can connect with other people.
23. Snack dispenser	A vending machine from which you can get ideas for an eating change. It is located in a common place within the student house. There are different categories from which you can choose from the vending machine. So you can get inspiration from each category. And if you have several housemates standing around the machine, it is also a conversation starter.
24. Calendar	A tear-off calendar that hangs centrally in the house, from which you can tear off a leaf each day. Each page features a different food change, or also facts.
25. Plate	The board can detect what kind of food is on the plate and can use that to inspire what you could swap next time. You eat together with your housemates in the evening, so then this could immediately start a conversation about swaps.
26. Fridge	It can show what's in the fridge for food and, based on that, give advice for anyone for which you might switch certain foods.
27. Infographic/motivation poster	It shows people food swaps and the effects it could have, long-term. It could also include motivational quotes and give ideas about eating changes.
28. Art	There is creative art in a common room for students that promotes the eating change. Something that motivates students.
29. Timer	Every so often, a small device beeps to remind you to make the food change. It can also be done without sound, in which case it sends motivational messages every so often.
30. Competition	Each housemate has to work with a food swap in his/her cooking and then the others can vote on the food and after everyone has cooked 1x, we look at the state charts, who has scored the highest. Whoever has scored the highest is the winner of the month. And then every month one person will be crowned the best food swap chef.
31. Sweatband	Everyone wearing this band participates in making food swaps that day/week. This way, you can see exactly from another person if they are participating and you can start a conversation about making food swaps.
32. Card	It's a pass you put in your wallet that has food swaps on it that you can do.
33. Microphone	The microphone is on a table, which should be able to start a conversation over the dinner change
34. Clock	When it goes off in the room it gives the opportunity to be reminded of the food swap and gives space to then talk about it with the people who are also in that room
35. Cage	Everything you swap you put in the cage, a cage for all the housemates, at the end of the week you go through the things you swapped together and can tell why you swapped dt product and what kind of swap it was and whether you would make the swap more often

36. Fruit basket	A basket or cupboard containing healthy food swaps that people can take out.
37. Good pan	If someone wants to make use of this pan then he has to make a food swap.
38. Envelop and piggy pot	Each housemate has an envelope where they can put things in, ideas about eating changes, motivational quotes, or something else. You can then put this in a piggy bank and it is opened at the end of the week and then they discuss what everyone did and why and read out the motivational quotes.
39. Paperclip	The paperclip can keep labels on which there are food swaps. You can write your own food swaps on the labels and then hang them on the paperclip. The paperclip hangs in the communal kitchen so everyone can always access it.
40. Stripe list	On the stripe list, put a mark when you have made an food swap, you do this with several people. That way you can motivate each other
41. Chip	You can put the chip in your laptop and then there are ideas on there for the food swap. You can then pass this chip on to another housemate.
42. Duct tape role	The duct tape roll is a tear-off roll, you can keep tearing off pieces where food swaps are on and you can stick them on doors/cabinets. That way everyone sees the food changes.
43. Lunch box	If you use the bread bin, you have to make an eating change that day. You pass the lunch box around every day. the lunch box itself can have inspiration things on it.
44. Stuffed animal	A hug in the shape of a food swap and when you squeeze it it says motivational texts
45. Metertje	Just like in a car, you have a gauge box and then you see the pointer go up and/or down. That way you can see your progression, if it goes up you're fine with the food swap.
46. Counter	The counter keeps track of how many food changes you have made and this is then put into a shared online chart. This way, everyone can see how people are doing
47. Food packaging	On the food packages there are food swaps that people could make. So, while cooking, you see the swaps that could possibly be made and you can talk about that with your housemates while cooking
48. Stickers	There are all stickers of food swaps and you can then collect them. If you have duplicates, you can swap them with housemates to eventually have all the stickers. You can stick these stickers in a sticker book. So it also gives inspiration.
49. Advent calender	Each day features a different food swap. Joint calendar with housemates.
50. Music box/ radio	On this box/radio, you can all listen to an eating change podcast together and then talk about it. Or instead of a podcast, the radio option gives you information about the food swap.
51. Glasses	That lets food 'change' with the virtual glasses. Someone visually doing the food swap for you
52. Bottle	On the bottle are pictures of food changes. Taking the bottle with water automatically reminds you of the food swap as well

53. Vest	If you wear the vest you have to make a food swap that day, you pass on the vest
54. Photo frame	In this frame is a picture of food swaps. A picture frame that is digital and automatically moves on to the next one, this allows you to get inspiration. Anyone can send in things that are then displayed. This picture frame is in a communal room, the kitchen for example.
55. Tea questions/ coasters	Just like on the pickquick tea, there are questions on the tea card. When people drink tea/coffee together, there can be such a question. And also if people drink only water, there are coasters with the same kind of questions as well.

Table A.1: idea table

Scores table

	Social support	Social connect- edness	Awareness	Goal set- ting	Motivation	Inspiration
hanging system and stick	0	+	+	++	+	-
A4 and Binder	++	++	0	-	+	+
Light cord and checkboxmachine	+	+	0	++	+	-
Grocery shopping bag and shopping lists/eating list and planner	+	+	++	0	+	++
Phone case	-	-	+	-	0	+
Keychain	+	+	++	0	+	0
Jewellery	+	+	-	-	-	-
Crocs	+	++	+	++	+	0
Friends book/giving through book	++	++	0	0	+	+
Whiteboard/memoboard	+	+	+	0	+	+
Newsletter/magazine	+	+	++	-	+	+
Pointsystem	0	+	+	++	+	-
Balloon	-	+	+	+	+	-
Tea/coffee can	+	+	+	0	0	+
cookbook	+	+	++	0	+	++
Food scanner and scale	-	0	++	-	+	-
Food box	0	+	+	+	+	+
Magnet	-	+	+	0	0	+
Labels	-	-	++	0	-	0
Container	0	0	+	0	+	-
Games						
Monopoly	+	+	0	++	0	0
Puzzle	0	+	-	0	-	-
Dice	+	+	+	++	+	0

Card Game	0	++	0	0	-	+
Memory	0	+	0	0	-	+
Spinning board	+	+	0	+	+	+
Grab bag	-	+	+	+	0	++
Bingo	+	++	0	++	+	+
Watch	+	0	+	0	+	-
Snack dispenser	-	+	+	-	0	+
Calendar	+	+	+	-	+	++
Plate	-	-	++	-	0	+
Fridge	-	-	++	0	0	++
Infographic/motivation poster		0	+	-	+	+
Art	0	0	+	-	0	-
Timer	+	-	+	-	+	-
Competition	+	++	+	++	+	-
Sweatband	0	+	+	-	-	-
Card	-	-	+	-	0	-
Microphone	0	+	0	-	0	0
Clock	0	0	+	-	0	0
Cage	+	+	+	0	+	+
Fruit basket	0	0	++	-	0	+
Good pan	0	0	+	+	0	-
Envelop and piggy pot	+	++	+	0	+	+
Paperclip	++	+	+	0	+	++
Stripe list	0	+	+	+	0	-
Chip	-	0	+	-	0	+
Duct tape role	++	+	+	-	+	+
Lunch box	+	+	+	+	+	-
Stuffed animal	-	-	0	-	+	-
Metertje	-	-	++	+	0	-
Counter	0	+	+	+	+	-
Food packaging	0	+	+	-	0	+
Stickers	-	0	+	+	-	+
Advent calender	+	+	0	+	+	+
Music box/ radio	++	++	+	0	+	++
Glasses	-	-	+	-	0	++
Bottle	-	-	+	0	+	+
Vest	0	+	+	+	0	-
Photo frame	++	+	+	0	+	++
Tea questions/coasters	0	+	+	0	0	+

Table A.2: scores