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**A service to facilitate healthy eating  
behaviour in children age 8-10**

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**NOM**  
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Healthy eating, Happy living.

## SUMMARY

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Nowadays, the children eating habit is being paid more and more attention, not only by children's parents, but also by the world. The future would be built by children, while some of them are at the risk of being eroded by bad eating habits. The bad eating habits have a variety of impacts which could be divided into the short-term and the long-term.

From the short-term perspective, as most parents have experienced, it would lead to family conflict and intense. In most cases, this conflict happens more often in the family with children who are fussy eaters. Moreover, in the long term, the unhealthy eating habits would cause numerous troubles, the most common symptom is obesity. Obesity is one of the world's biggest issue. the obese children are more likely to develop into an obese adult if they can not correct their eating habits (Antipatis and Gill, 2001).

Therefore, the severe situation gives birth to the value of this project- encourage children to develop healthy and happy eating habits as an opposition to bad eating habits, fussy eating problem particular, as it has the short-term impacts like leading to family conflict and anxiety, and the long-term impact such as childhood obesity and rebellion.

This children-friendly project is meant to help children happily uncover the food knowledge instead of just being forced to eat the food against their wills. It strengthens the connection between children, parents, and school and maximises the value that children could achieve. The gamification in this service plays an important role in guiding children build the spontaneity of improving the eating habits, which also creates more possibilities in the innovation of children food education. Once children developed the autonomy of eating healthily, the terrible consequences above could be reduced in the early stage.

The service was tested with families and school, and got very positive feedback which gave the solid support to the feasibility. As the children grow up quickly, more possibilities and further development would be considered to maintain the sustainability of the service.

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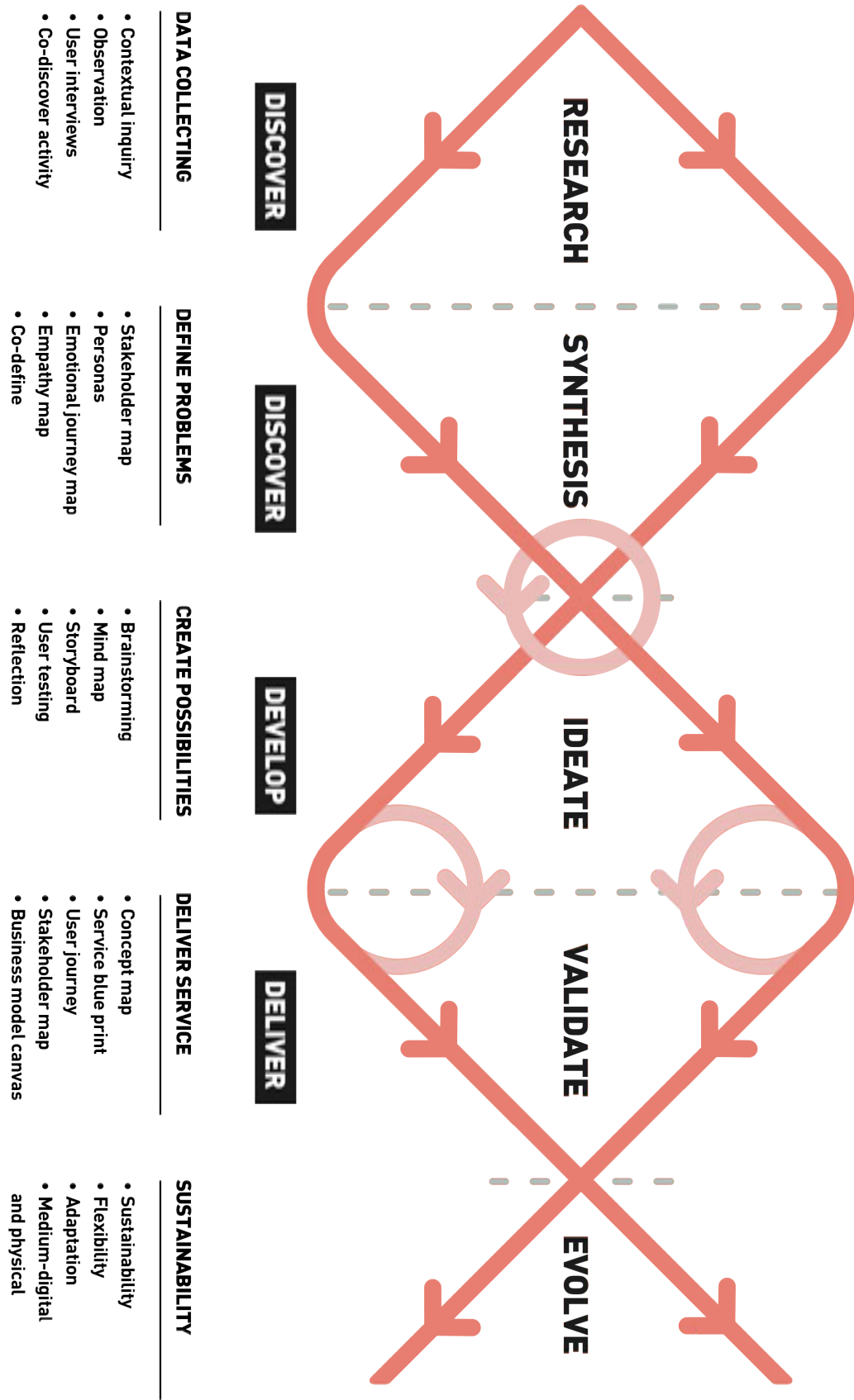
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# DESIGN RESEARCH PROCESS AND METHODOLOGY

Due to the children safe-guarding issue, the difficulty of getting in touch with children was slightly increased during the design process. In order to better understand the children and reveal the potential gaps and core needs, various tools and methods were tailored and modified according to the feature of children.

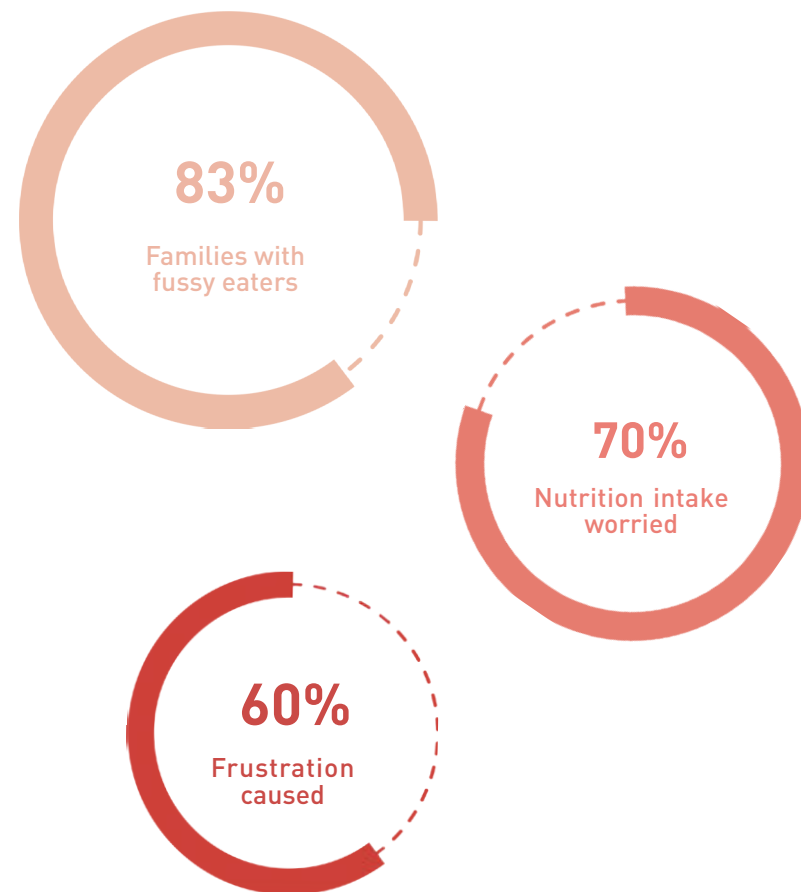
The methodology goes with the double diamond model[Design Council UK, 2005] which is the basic service design process. The tools which were designed for different use during the process, such as the co-discover tools, all based on the children-friendly principle. Particularly, the narrative methods like story telling is very handy and effective in the interaction with children. The methodology also enables to get the strong empathy and expedite the idea generating.

The design process iterated for at least three times. the first iteration happened between define and develop. During this period, a co-define session helped to narrow down the insights and generate the research question. The other two iterations happened in the testing phase between develop and deliver. All the feedback and iterations in the whole process built blocks to the final service.



# BACKGROUND

Most habits are life-long, especially the eating habits. A good eating habit gives benefits to people from childhood to senectitude, while a bad eating habit would lead to a number of hidden troubles. Moreover, these seeds of troubles usually have been sowed since people were young.



## FIELD OF STUDY

Every day, the school children would be impacted by the health problems related to nutrition, which is becoming one of the worldwide crisis (Duster, 2009).

As the ringleader, fussy eating is a problem which harasses **83%** of UK parents whose children are fussy eaters, and near **70%** of parents are worried about their children's nutrition intake. **60%** of parents said fussy eating was a cause of frustration (Abbott, 2013).

Besides fussy eating, snacking all day takes part in the bad eating habits forming as well. Constant snacks nibbling, even the healthy snacks, would influence children's appetite at mealtime and perturb children's feelings about hunger and fullness (Kuzemchak, 2014).

There're also many other bad eating habits undermine children's health, like eating while watching TV which would lead to the sugar overdose.

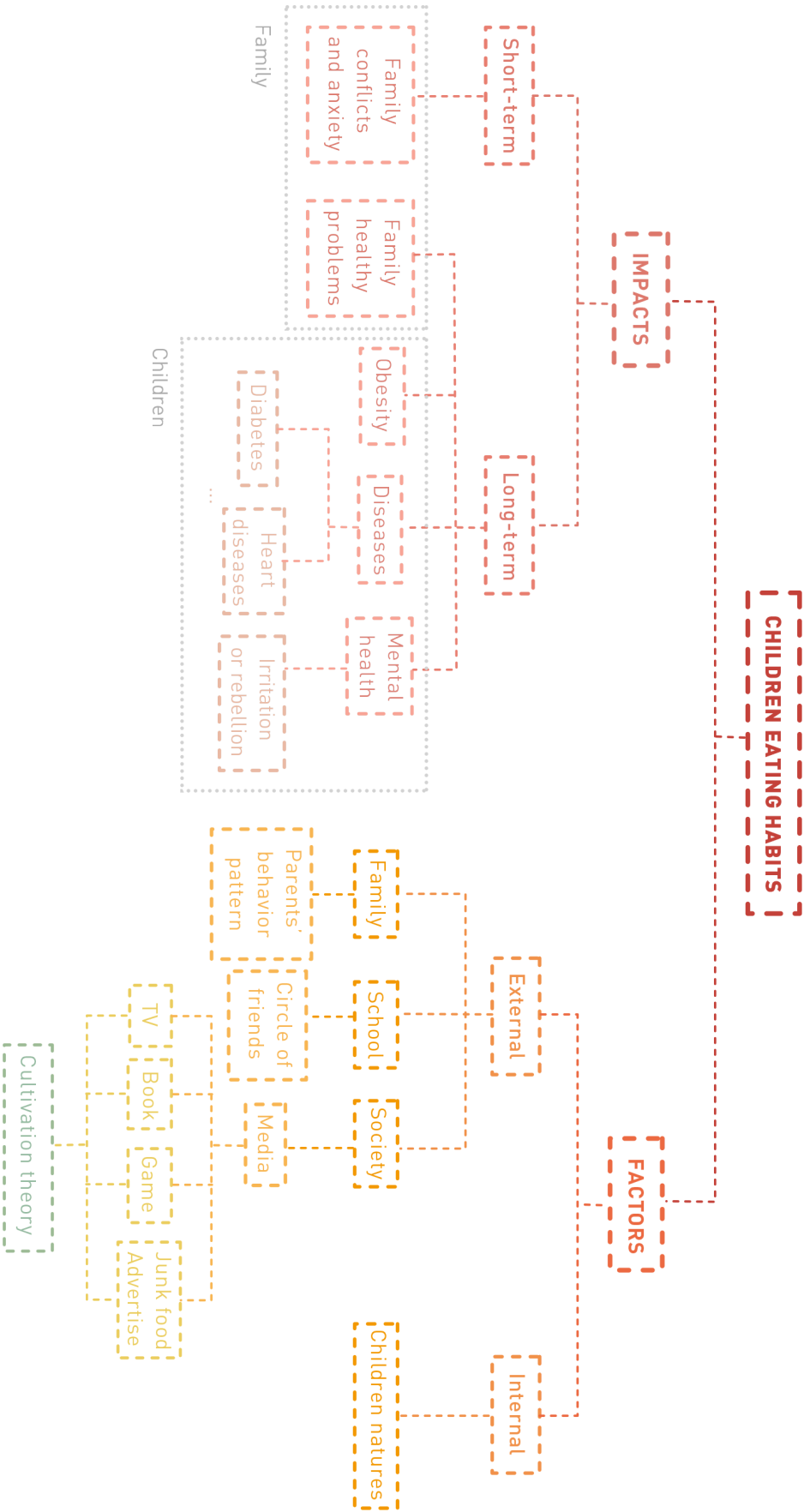


(Radcliffe, 2016)



**Impacts:  
short-term and long-term**

Different bad habits lead to different consequences and influences. Generally, the impacts of keeping those bad eating habits could be divided into two categories by short-term and long-term.



### Short-term impacts: Family conflict and Anxiety

The first one to be talked about is the short-term impacts - family conflicts. The families with children have poor eating habits like fussy eating are more likely to be plagued by family conflict and tension, especially in the meal time. Many parents whose children are fussy eaters indicated that the meal time is becoming the most frustrating part of the day. They got all kinds of excuses from their children, sometimes the children just crying hysterically.



[Anderson, 2014]



[Familydoctor.org, 2017]



[Ikpin, 2012]

### Long-term impacts: Rebelliousness and Obesity

Moreover, if things go on like this, the children who grow up in this stressful family environment are more possible to get irritated, and have an aggressive or rebellious tendency, which would develop into long-term impacts.

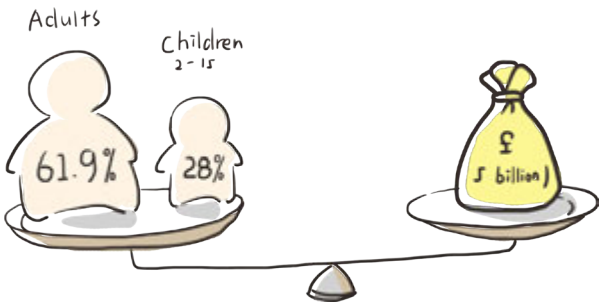
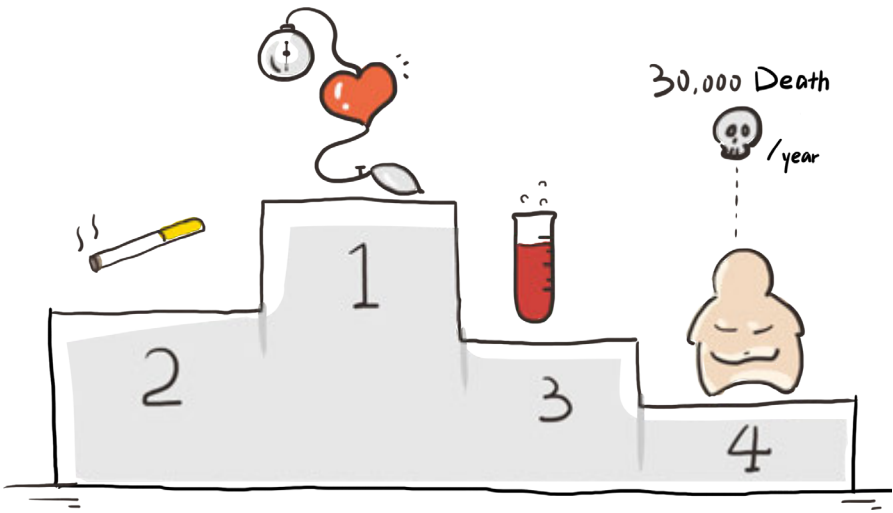
What are the long-term impacts? Continue with the family aspect, many parents are having a children-centred lifestyle nowadays, which contributes to many children-centred families. Therefore, the children's preference would influence them unconsciously. For example, if their children hate mushroom, they would try to reduce the time of cooking mushroom or even avoid. So the whole family would take less mushroom than usual. It turns out that the whole family's food variety is limited. Similarly, the whole family is possible to fall into other bad eating habits in the same manner.

What's more, for the children themselves, the unhealthy eating habits would bring many physical health problems to them, such as overweight, obesity, underweight, and various diseases. As one of the most typical manifestation of unhealthy eating impacts, obesity is a very intractable problem among children. As Ana Isabel Rito (2017), who is the president of the CIOI 2017(The International Conference on Childhood Obesity), pointed out that millions of children are suffering from obesity worldwide.

# THE TREND-NHS PLAN

Now & future-childhood obesity and healthy eating

In HSCIC's report (Health and Social Care Information Center) (2016), it demonstrated that from the NHS Atlas of Risk, the ranking of the **largest risk** factors which result in deaths in England, obesity is assessed to be in the **fourth place** while the top three are hypertension, smoking, and high cholesterol. The further data indicates that obesity is responsible for over **30,000 deaths** every year(GOV.UK, 2017).



**61.9%** of adults and **28%** of 2-15 –year- old children are diagnosed with overweight and obesity, which make the HNS spend over than **£5 billion** each year on the overweight and obese issue(GOV.UK, 2015). After the launch of the childhood obesity plan, the National Institute for Health Research (NIHR) Obesity Policy Research Unit has been established to support the research about childhood obesity. In 2017, a new obesity research unit which got **£5-million** funding from NHS - Department of Health(DH), was set up to further investigate the childhood obesity and help the plan delivering in the future. (GOV.UK, 2017).

Therefore, it seems that the childhood obesity and healthy eating would be one of the long-term and main challenges for HNS to work on in the following years.

## PROJECT VALUE

In general, based on the data and desk research above, the value of this project is to **engage children age 8-10 years old into healthy and happy eating as an opposition to bad eating habits, especially the fussy eating issues, as it has short-term impact that causes the family conflict and anxiety, and long-term impact which result in the physical and mental health, obesity and rebellion partly for represent.**



## TARGET USER

During the beginning period, age eight is a milestone. By age eight, children will start to generate a sense of their self-being in the world and come up with a lot of opinions and stronger interests. Also, loving to create stories, help cooking, play toolkits, and discuss the topic related to growing up are the features of this age (WebMD, 2016). Especially for children age from 8-10 who have strong curiosity and thirst for exploring everything, they absorbing the information from the environment quickly as well as copying other's behaviour. Additionally, children in this age group are generating the outlook of right and wrong when the effect of healthy eating habit education would reach a peak form.

The beginning period of children's school years is a dividing line in both of their physical and mental development, which means their behaviour patterns start to take shape

Veselá and Staňková, 2008



# THE FACTORS

of children eating habits

Though the dreadful data above kind of illustrates that keeping a healthy eating habit is not such an easy case, it still could be possible if people start with the factors which impact children's eating habit. Understanding the factors helps people recognize the numerous obstacles and temptations on children's way of being a healthy person. There are two kinds of factor as well, the internal factors and the external factors.

## Internal factors: Children nature

On the one hand, the internal factors depend on the **nature of children**. Just as the features mentioned above, the children from 8-10 years old are at the stage of quick learning and copying. They are easy to be impacted by the environment because their mind and behaviour patterns are still in developing.

## External factors: Family, school, and social environment

On the other hand, there are many different environments in children's daily life. The family environment, school environment, and social environment would be discussed at the external level.

Firstly, **family environment** is the most important factor which lay the foundation for a child's behaviour pattern. To be more specific, parents play an important role as a model in the formation and transformation of children's behaviour pattern and food preference. (Liu and Stein, 2005). The family was rated by 37% of children from seven to ten years old as their healthy eating role models(Clark,2017). Children are good at copying behaviors and thoughts, while parents are the main medium lead them to explore the world. If this compass lost the right way, the children can hardly have a clear sense of healthy lifestyle, let alone the healthy eating habits. Especially when children reject the healthy foods that the parents want them to eat, there's a big chance that the mealtime would become intense and confrontational. The caregivers who have less experience, feel anxious, or have unhealthy eating habits, might lead to the family become a hardship case which needs an extra hand to facilitate the formation of the children's eating behaviour pattern at home( Black and Hurley, 2007).



In addition, the **school environment** plays a key role in eating habit development as well. This is the second-main place where children spend much time in their daily life besides home. Children learn and impact each other during the daily communication since they have more common topics and similar cognizance level. Sometimes, there's even a more important influence on the children's behaviour than the lessons had at home because of the necessity of surviving at school and mingling with friends( Paton,2007).

Nevertheless, the **society environment** is the factor that impact the children's mind without their consciousness. Normally, it's embodied in the various kinds of media, such as books, TV shows, and advertisement posters. George Gerbner (1976) claims if the audience get used to having a prolonged TV viewing, they would literally get long-term influences from it, which is mainly what cultivation theory talking about. It means people watch cartoon are possible to be assimilated by the scene in the screen which illustrate that if people spend more time on watching TV, their reality cognition would be more likely to be reflected on the scene they see in the screen(Odukamaiya,2014). So for example, if a cartoon uses broccoli as a villain while a hamburger is the personification of justice who defeated the evil broccoli, this would mislead children have an emotional aversion to the broccoli, and have an increasing affection on the hamburger.

Therefore, based on this theory, not only the television, but also the books and junk food advertisements, the media do have a word in children's thinking and behaviour patterns formation, and impacts would be long-term.

Television's function is enculturation.  
George Gerbner, 1976

## CASE STUDY

The children healthy eating issue has caught more people's attention since the impacts have become more and more perceptible in people's life. There are many existing third sector organizations working on the children health issues. Some of them do make a move and did excellent works.



[Matthews, L. 2014]

### Jamie Oliver-food revolution

Jamie Oliver is the one who's calling on people all to take part in a global Food Revolution to change the way of children's interaction and understanding of food. He advocates educating children about food in a fun and engaging way. He believes that helping children access to good, fresh, real food and the basic skills to cook has the power to transform lives and reduce obesity. They organize cooking sessions in primary schools or providing children with the tools which are used to grow food from seed and preparing nutritious meals from scratch equips the children with some of the life's most valuable skills. Also, they offer the recent campaign and share cooking recipes on their online platform- Jamie's Food Revolution.



[Flying Eye Books, 2017]

### Wahaca-school cooking class

Many restaurants offer the different level of children services, Wahaca is one of them. Wahaca is a Mexican restaurant not just serves a fun and healthy children menu of 'build your own tacos', but also offers the cooking class such as guacamole sessions to children study in primary schools which near to wahaca's London sites. They teach children about food knowledge and help them make their own food with the healthy ingredients. Moreover, Wahaca equipped the children-friendly London branches with "Flying Eye Books" mini-libraries, where children are able to enjoy reading while their parents are still eating.

## PRIMARY RESEARCH

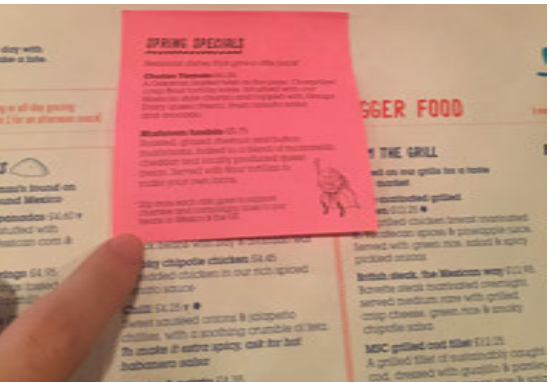
# INTERVIEWS

## Wahaca restaurant

After the secondary research on Wahaca, the more insights about the school cooking session and children eating habits were collected from the interview with the manager of Wahaca (waterloo branch).

### Insights:

- A good competitive and reward mechanism always engages children.
- Different job positions and responsibilities in a restaurant would help children build the sense of career.
- Children don't know the ingredients well, sometimes they can't even recognize it.
- Give children proper guidance is very necessary
- Each menu has different but nice illustrator which children love so much
- "Some children can't focus on eating, they just stop eating and go away"
- Children hate to be forced
- Give children more specific information about the food they are eating
- Some children they refuse the food because they don't know what's in it. They don't trust.





## Torriano primary school

Once a week, the Torriano primary school has nutrition cooking class which children love very much. Each session lasts 1-2 hours including preparation.

### Insights:

- The school nutrition class now teaches cutting skills, nutrition knowledge, fitness tips.
- The bad eating habits are the biggest problem.
- Children eat better with parents- “the parents should be educated with their children together”.
- The nutrition class are seeking partnership.
- Children like to work in the group and learn from each other.



## NHS-Change 4 Life team

According to Gina, a governmental program named Change4Life was mentioned. Public Health England(PHE), an executive agency of DH, has a campaign called Change4Life which guide numerous families eat healthier by helping identify the sugar, salt and fat in food with its meal swap tips and the Be Food Smart app. Also, it includes 5-minute shake ups to encourage do more exercise.

### Insights:

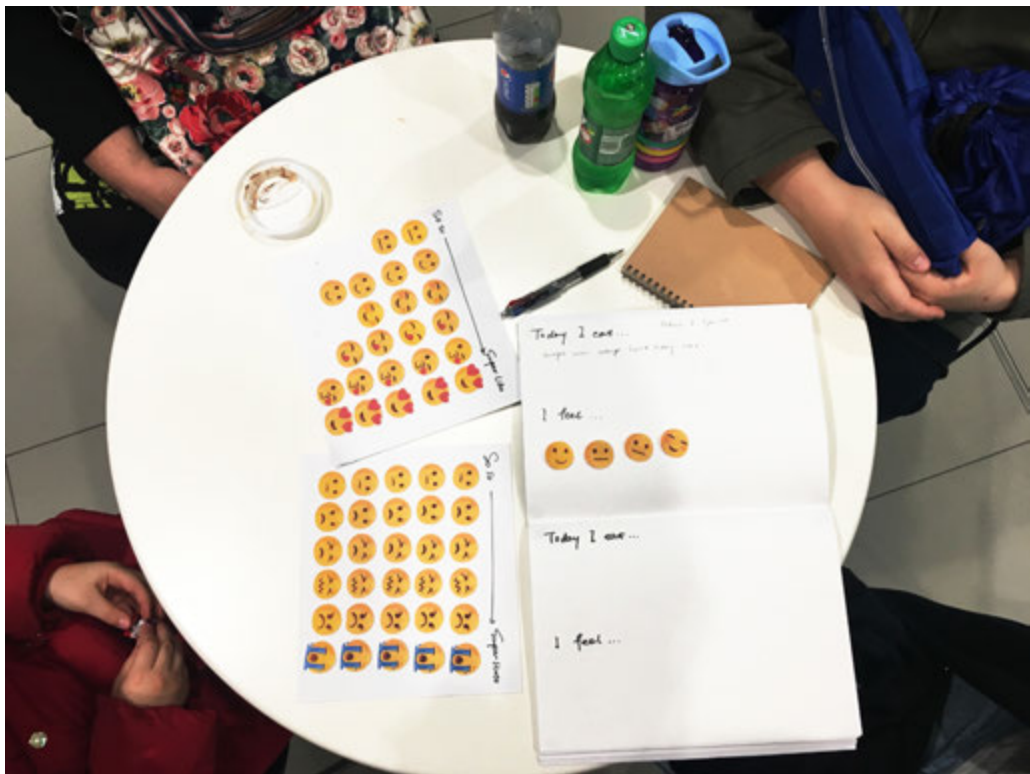
- Focus on children's capacity building
- The team want to have more national campaign
- The service for children must be fun
- The service should build on the children's knowledge level
- Get the children involved first, and they could do more
- Children copy each other
- Cooking is the activity that both of parents and children love
- The service needs more publicity and support





CO-DISCOVER

The data and insights gathered so far give a rough sketch about the features of 8-10-year-old children through the adults and their efforts made for children. However, it's far from enough. The user-centred design means insights from 8-10-year-old children play a decisive role. The co-discover activity took the insights from previous research as a reference, it's intended to dig out the real children needs, and winnow away the one-sided insights which come only from the adult's perspective.



PART ONE:

The first part of the co-discover activity is mainly about helping children recall the details of their last meal by using the co-discover tools and answering questions.

This part of activity would give a large scope of children from 8-10 about:

- The existing children eating problems
- Eating preference
- Children's daily eating environment
- The emotional changing (to different food/environment/people)
- The current food cognition level (healthy/unhealthy)





## PART TWO:

Then the second part is based on a short story about the persona-Sam, a 9-year-old boy. The children would be expected to judge the healthy degree of Sam's daily menu and explain why. Then they would get a chance to design a healthy menu for Sam as a nutritionist. Last but not least, the children need to think about how they can convince Sam to accept the new menu, and help him to realize the negative impact of bad eating habits. The children were suggested to switch the role when they had no idea. It means they can think about how themselves could be persuaded or engaged by people.

**This part of the activity was aimed to see:**

- Children eating preference
- Children's current attitude and cognition level to food (healthy/unhealthy)
- The most effective way to engage children to eat in their perspective



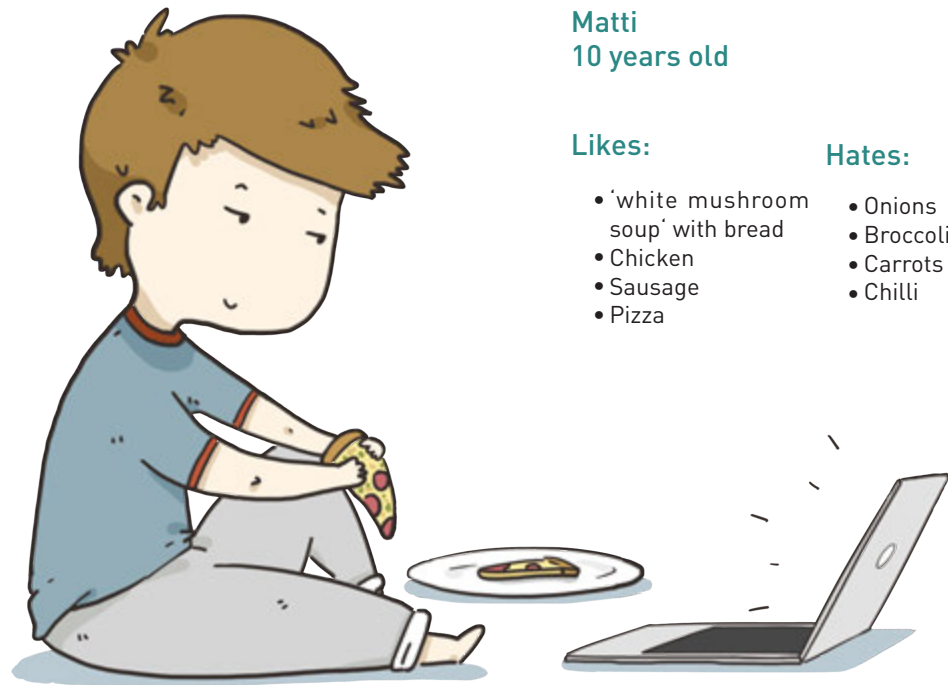
# DATA ANALYSIS AND SYNTHESIZE

## PERSONAS

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To synthesize the large amount of data and insights gathered from co-discover activity as well as other information in discover phase, some personas was built to show the feature of the specific user group for the further analysis.

## Persona #1



**Matti**  
10 years old

### Likes:

- 'white mushroom soup' with bread
- Chicken
- Sausage
- Pizza

### Hates:

- Onions
- Broccoli
- Carrots
- Chilli

### Information:

- Eat in bedroom
- Doesn't eat veg very often
- His parents always busy
- He likes watching TV or playing online games during meal time
- He is always forced to eat food he hates such as carrot and broccoli, he gets used to that also because mom said they are healthy

### Quotes:

"If I can see how vegetable makes me healthy, I will eat."

"I like eating very fast then I can go out and play with my friends."

"I was lonely because sometimes I have to eat alone."

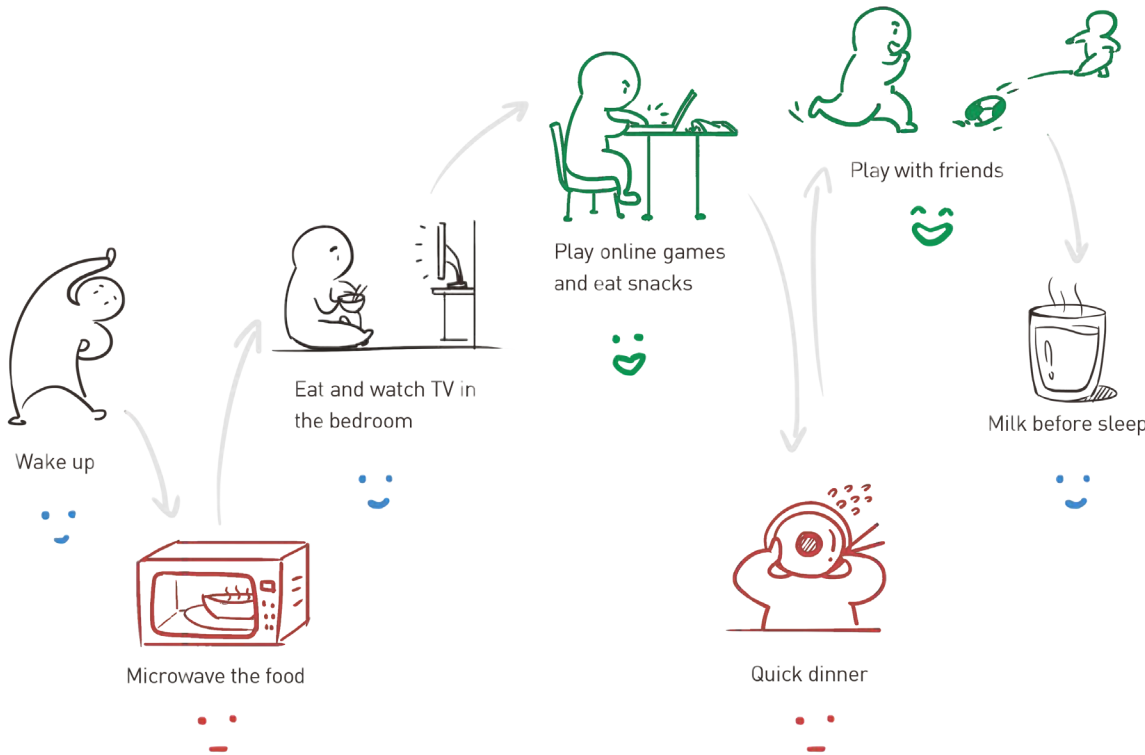
### Insights:

- He can hardly concentrate on eating
- He need more interaction with friends or parents
- He has to get used to eating food they don't like
- He wants to be a healthy person but don't know how to start
- He doesn't have enough food knowledge and has no idea about what he is eating
- He has pressure from parents during the mealtime

## JOURNEY MAP

The children like Matti is the target user group of this project. Matti's parents always busy, so sometimes he has to eat alone, especially during the summer holiday. As the journey map indicated, he feels a bit down when microwaving the food in the morning and eating dinner before going out, while playing online games and eating snacks and play with friends outside make him feel happy, especially the latter which is the happiest time in the whole day.

### Matti's holiday:

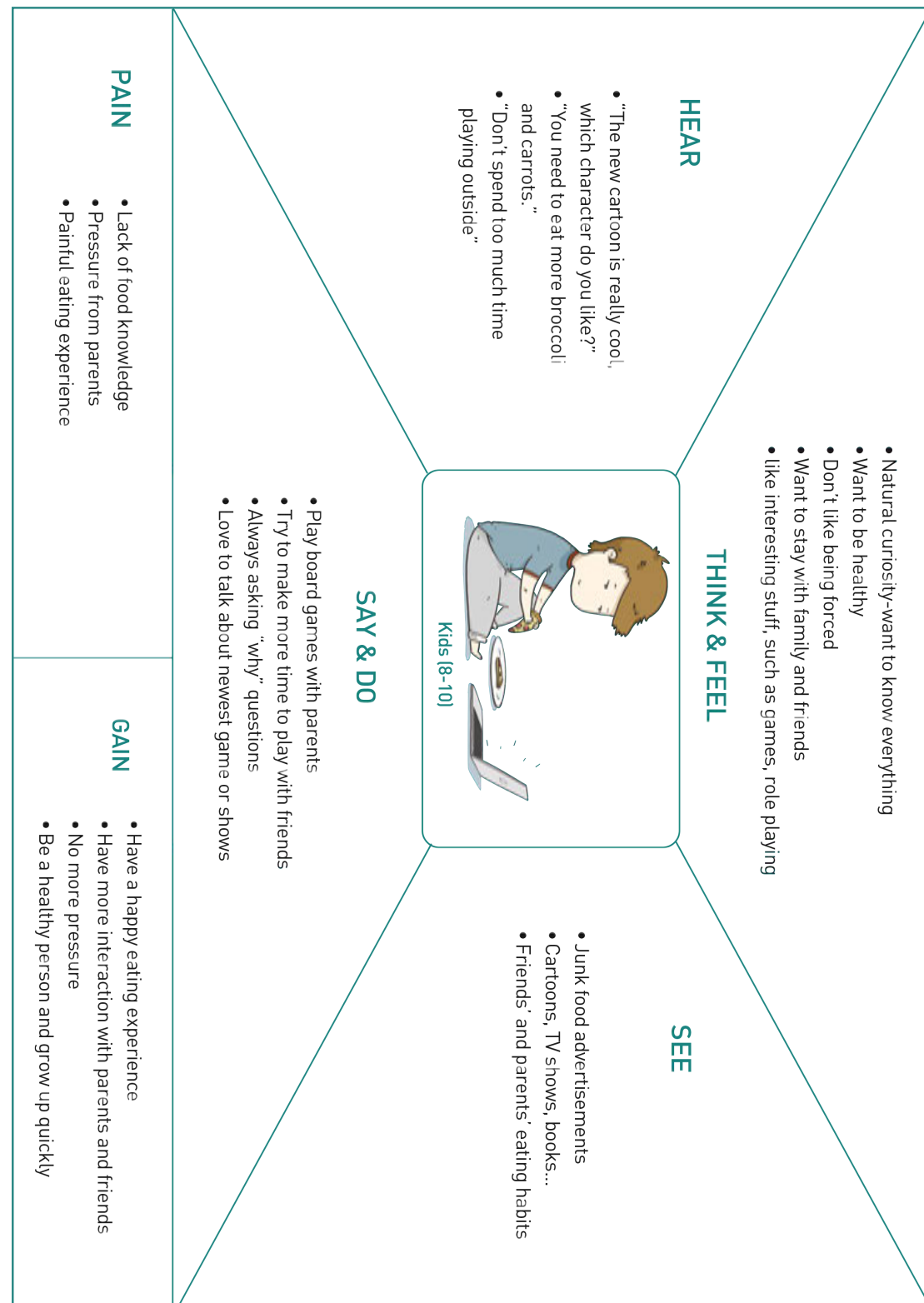


### Opportunity #1

How to help children like Matti to develop a healthy eating habit based on a better understanding of the different impact of the food?



## EMPATHY MAP



## Persona #2



Emilie  
36 years old

Information:

- Office worker, always work overtime
- She has a 10-year-old son
- She really cares about her son's nutrition intake
- She tries not to force her kid to eat

### Quotes:

“ If you want a kid to accept a food, you have to cook it for many times. ”

“ Tell a story with the food will  
arouse his interest. ”

“ I try to exaggerate my face while I’m eating to show how delicious it is and how I enjoy the food. ”

### Insights:

- She is busy on work but do care about their children
- She doesn't advocate forcing children to eat
- doesn't know how to engage children eat healthily without spending too much time
- She has some clues of how to guide children to eat, but it takes much time and energy
- She needs guidance and food knowledge as well

## Opportunity #2:

How could parents like Emilie easily engage children to eat healthily and learn food knowledge with children together?

## Persona #3

Tina

34 years old

### Information:

- Primary school teacher, also manage the school nutrition class
- She is a workaholic and always busy
- She loves children very much
- She spends most of her time with children and knows them very well

### Quotes:

"children enjoy cooking and chopping, they hope the class could be longer."

"There's a gap between the school and parents."

"The kids all very energetic, it's a skilled task to manage the cooking class."

### Insights:

- The school and parents haven't built a tight connection.
- The teacher has strong empathy on children
- The teacher has limited energy in managing the class



### Opportunity #3:

How to build a stronger relationship between family and school to fill the gap and create more values and for children?

## CO-DEFINE

In order to refine the insights from children like Matti which is the target user group to find out the core barrier that limits children to develop healthy eating habits, the "how might we" question list based on these insights were created for children and parents in the co-define activity.

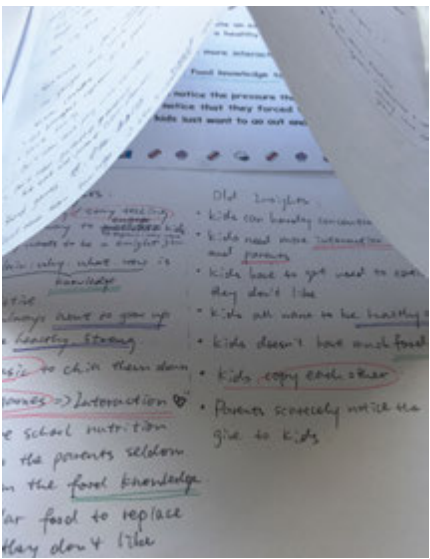
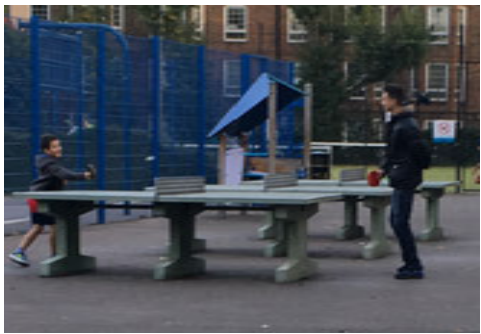
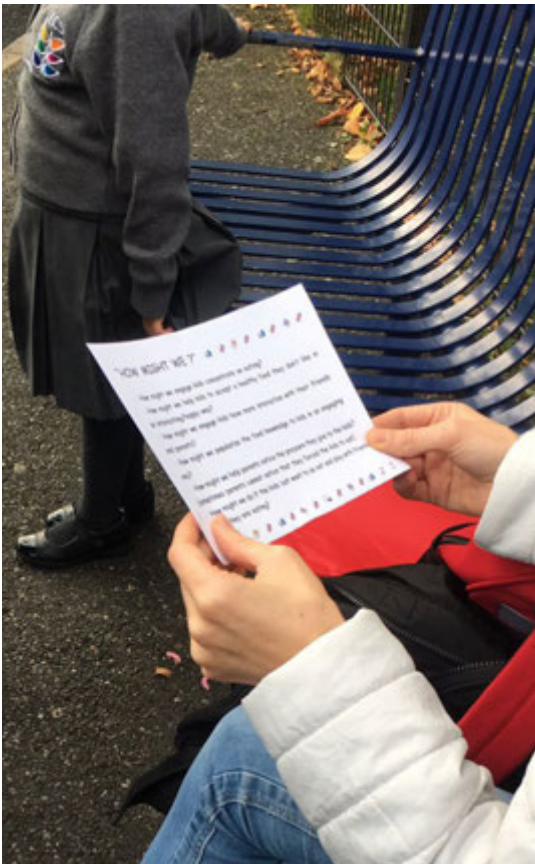




# INSIGHTS & GAPS

## Insights from co-define:

- In stead of demanding, an explanation is more convictive.
- Role playing and storytelling is the good way to engage children
- Children always want to grow up and be strong like a knight
- Children love interaction, board games are a good medium
- Parents seldom teach children food knowledge because children have nutrition class at school, also parents lack food knowledge



Therefore, compare the new insights to the old insights, it's easy to find out the common ground. Basically, the key points were integrated as the following:

**Core gap:**  
Lack of food knowledge (both children and parents)

**Motivation:**

- Children want to be healthy and strong
- Children have the natural curiosity

**Approaches:**

- Nutrition class
- Role playing
- Storytelling
- Interaction like playing board games
- Positive impacts from other children (children copy each other)

## FRAMED QUESTION

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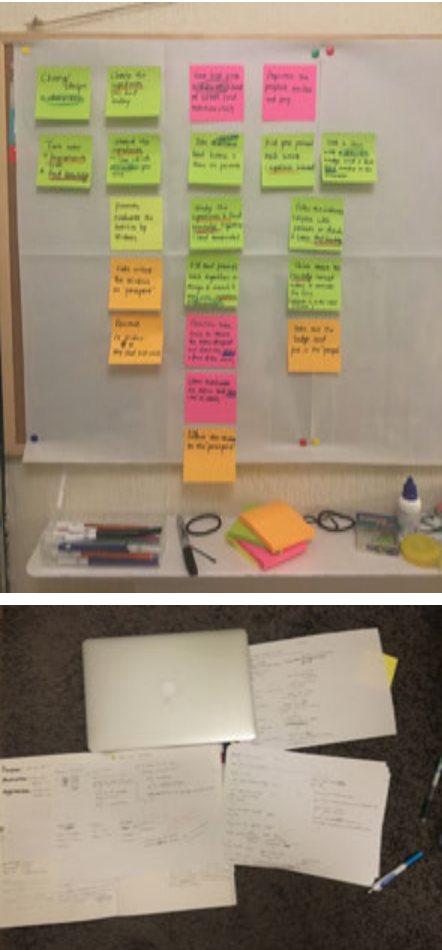
According to the key points above which was winnowed from all the research, data, and insights done so far, here comes the framed question:

**How to engage children explore the food knowledge with parents or friends to develop healthy eating habits based on the children nature ?**

# CONCEPT DEVELOPMENT

IDEATION

Based on the framed question, a brainstorming at ideation stage is helpful to collect all the possible ideas.



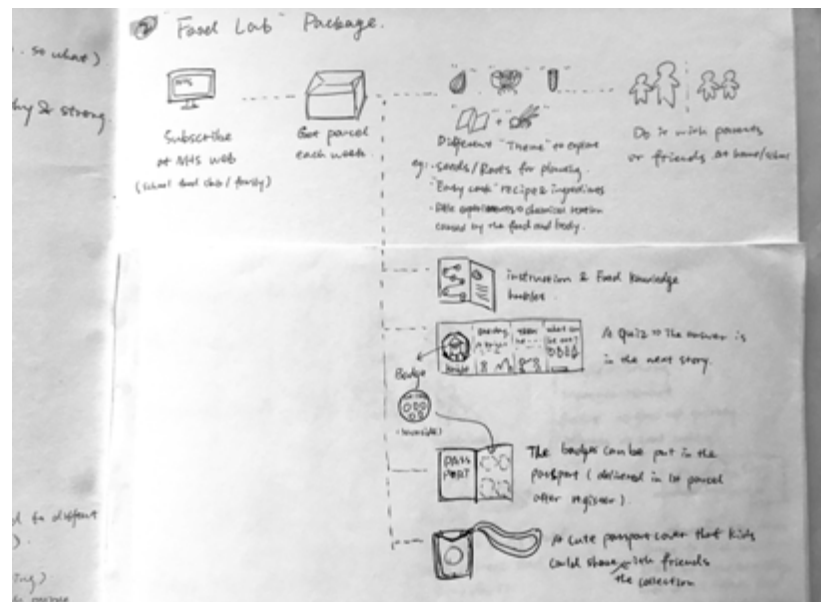
From the ideas, the **tangible interaction**, **communication**, **sustainability**, **role playing**, **story telling**, and **peer effect** are considered as key words of the concept. According to these key points, the following three rough concepts are built for further synthesis:

Rough concept #1

The first concept is “what do I look like today?”. Different food impact different part of people’s body. This is a puzzle box produced by NHS. It contains various size of puzzles which could constitute a children body. At the backside of each puzzle, there’s a food which could benefit to this part of the body. For example, sesame is one of the food that good to people’s hair, so children could find the knowledge of sesame at the back of a hairstyle puzzle. Each body part has many different styles to be chosen. At night, children find out what have they eaten today, turn the puzzle over, they will see a character was built which represent how they look like today. Vice versa, in the daytime, if parents have no idea about what to cook for the children, they can use this puzzle as a reference.

**Evaluation:**  
This concept builds connection between food and body, and children could see how food impact their body in a more direct and visual way. However, it’s not sustainable enough and lacks a long-term consideration, which means if this concept need to go further, only a tool book is far from enough. Instead, expansibility and sustainability need to be considered.





### Rough concept #3

The last concept is a card set offered by NHS. It designed for school nutrition class. At the end of each nutrition class, a child would be chosen to pick a card from teacher. The obverse of the card is a character while the reverse is some food this character likes. After class, the child takes the card to home and show it to parents. Then they are expected to use the character and food to design a meal and a story together. After that, in the next nutrition class, the child and parents need do a presentation about the food knowledge they learned, also a cooking session of their designed menu and story. Finally, the classmates can vote for the presenter by stickers. The one win most stickers get the chance to be a one-day volunteer in the school canteen.

#### Evaluation:

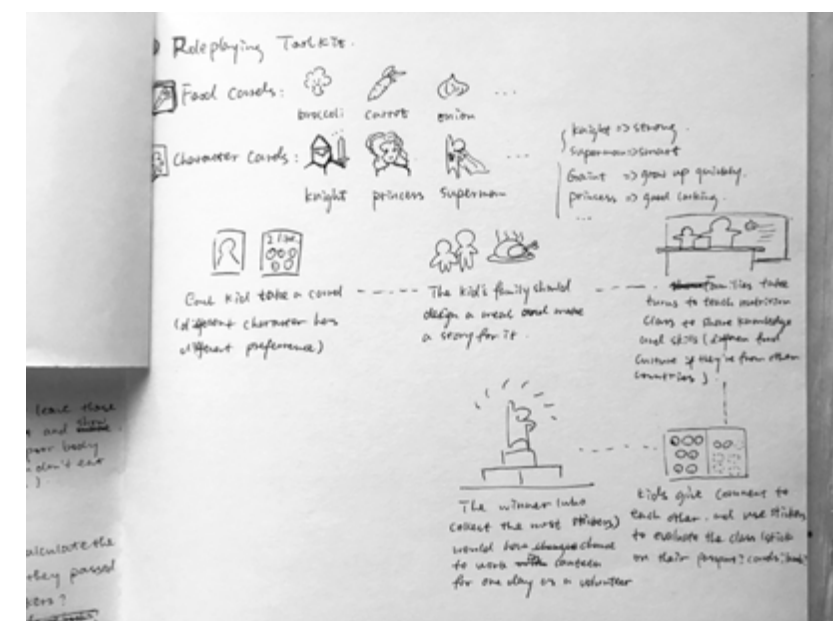
The concept utilized the regular school nutrition class and make the service be a part of the class. It scopes out a strongly connected environment by involving children, parents, friends, and school all together to be more engaging and competitive. However, the sustainability of the card set needs to be considered because the card's number is limited, and the procedure of each nutrition class is almost the same. How to prevent children get bored to it and give them more chances to win the stickers are worth to think about.

### Rough concept #2

"Food lab package" is a weekly home delivery service supported by NHS. The NHS offers the packages go with different themes each week, such as vegetable planting, simple digestion experiment, and cooking. Children are able to explore the different food at home by following the structure, collecting the badges and stickers in the passport, and answering a quiz card.

#### Evaluation:

The weekly parcel gives children more surprises because they never know what they would receive next week. The passport and collective badges give more fun and chances for children to interact with each other. Nevertheless, there are some similar package deliver services for children already, like cooking or planting, how to optimize the service to make it be handier and irreplaceable is the problem need to figure out.





# CONCEPT INTEGRATION

The three rough concepts have their own advantages and disadvantages. Look through the three journey sketches, it's not hard to find some connections or common grounds within these touch points. After weighing the pros and cons of each small concept, some necessary steps and details were added to connect the service process to make it go smooth.

## The integrated concept:

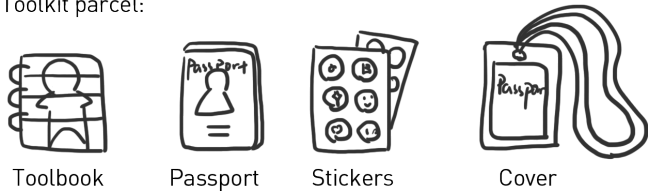
Finally, here comes the integrated service which synthesized from the three rough concepts :

### Toolkit:

The new concept using a toolkit to add a strong connection among children, parents, and school. Firstly, the parents could apply for the toolkit on NHS website. As service commissioner, NHS would provide and deliver this toolkit to each registered family.

The toolkit includes a toolbook with different characters and food knowledge, some stickers as collecting points, a passport for collecting stickers and redeeming the reward, and a portable passport cover. The toolbook contains various characters which were divided into three parts: head, body, and foot. Children could use the toolbook to design new characters by combining different parts from different characters. Each part has a food with its knowledge overleaf. Children are able to create the story with the food and the character, and using the food overleaf to design a meal with parents. In the nutrition class, the families could share the story and the meal to the class (one family each class). The family who did the presentation could get stickers from teacher based on the votes from classmates who think the story and cooking is nice. Last but not least, the stickers collected in the passport could be redeemed into different levels of rewards. Besides the school, children could use the toolbook to check their daily nutrition intake at home or help to tell their parents what they want to eat.

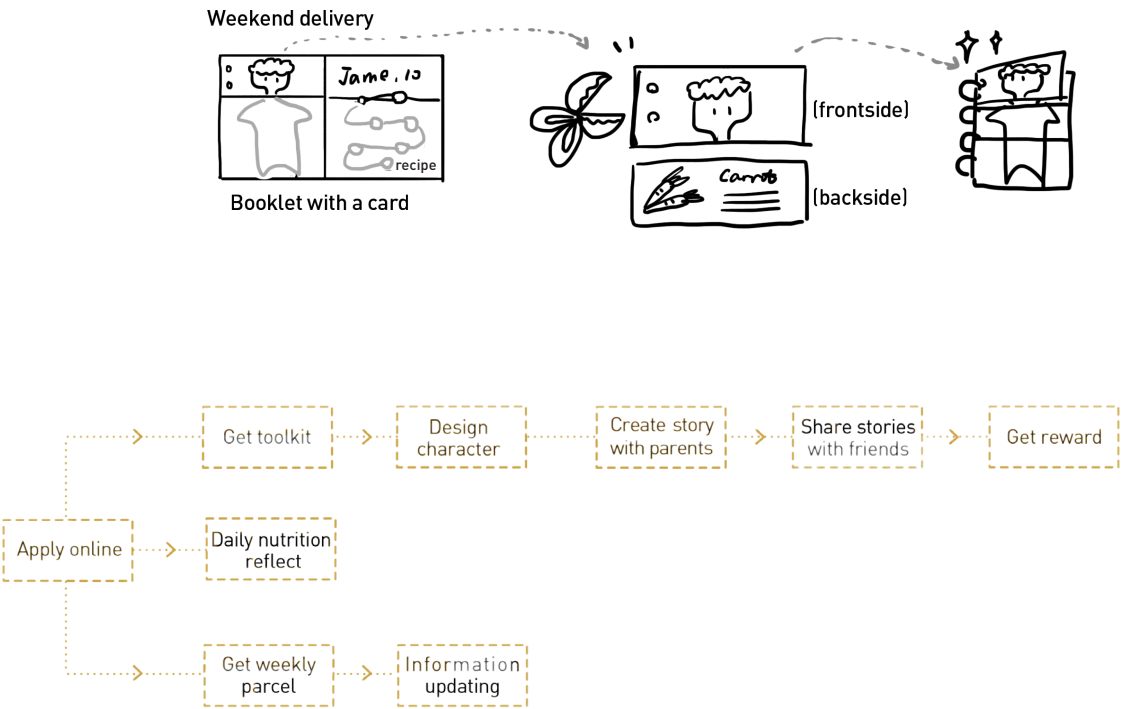
Toolkit parcel:



### Weekly delivery:

Furthermore, children would receive a weekly delivery from NHS, which is a part of this toolkit but in a “top-up way”. It includes a small booklet, a piece of small card with a new character and new food knowledge which could be added into the toolbook as a knowledge updating. The new character’s profile and a recipe for the new food are contained in this booklet as well. The weekly delivery equips this service with sustainability and more surprises which engages children’s curiosity.

This service engages children to have more interaction with parents and friends, and helps get rid of the communication gaps. The parents could learn the food knowledge with children during using this toolkit. The reward and competitive mechanism make this service more sustainable and engaging.



## PROTOTYPING & TESTING #1



### Prototype #1

Some rough prototypes and maps were made to test with the users. At this stage, the service was still in forming and to be iterated.



## Testing #1: School

The prototype was tested with school, and the feedbacks were quite positive in general. As one of the service main channels, the school plays a very significant role in engaging children into food knowledge learning, practising, and application. Therefore, getting the nod from school is of signality.



## Feedback from school:

### Suggestions:

- The food at the backside of the toolbox can be divided by groups, so the children can find out the food easily.
- The school could do all registrations online as a medium between HNS and families.(The food department of school would be a good choice to take charge of the relevant issue)
- Quiz might be a good idea which is very popular and effective in children learning.

### Positive evaluations:

- Children love things like stickers and stamps.
- The reward mechanism is nice and doable.
- Tangible tool gives strong Interactivity.
- It's good that the parents share the workload with the teacher, and learn with children in the meantime.

Encouraging parents to involve is a win-win situation for the family.

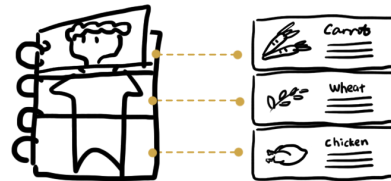
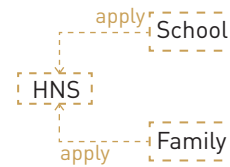
-Gina, Torriano Primary School

## Concept improvement #1

Combined the feedback with the service concept, the following stages are modified for the better user experience:

1.

The service online application could be applied by both of the school (teacher/ school food department) and the individual (parents).



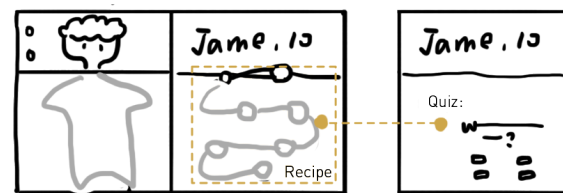
2.

The food content in the toolbook was divided into three main categories:

Head: vegetables and fruits  
Body: grains  
Foot: protein

3.

The quiz took place of the recipe in the booklet from weekly delivery. It helps the new food knowledge absorbed more quickly by children.



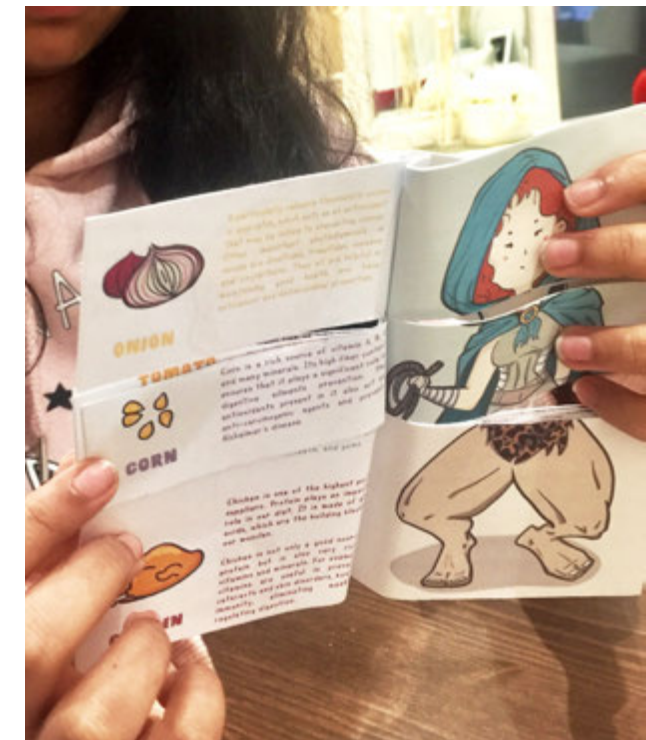
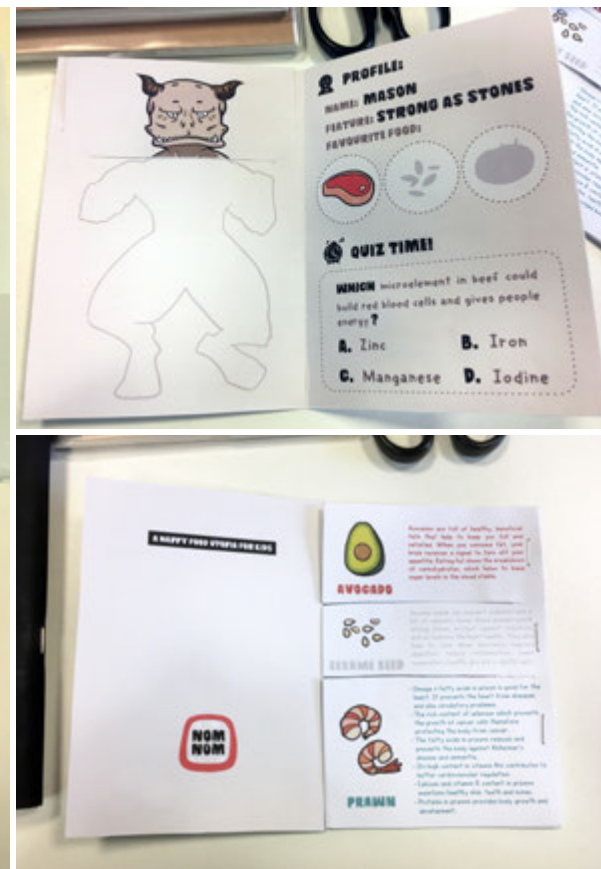
## PROTOTYPING & TESTING #2

With the tips from the first testing, the second prototype was prepared for the next testing with the family.

## Prototype #2







## Testing #2

With the new concept, the second prototype was prepared for the next testing with the family, and the testing scenario was at home.

The second version is made to be more colourful. More characters are added to give children more choices. The children were expected to use the toolbook to design the character and a meal story as well as the daily nutrition check with the parents.



## Feedback from family:

### Suggestions:

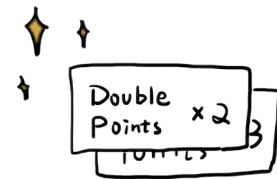
- Doing volunteer work at canteen is not tempting enough.
- Children are not interested in designing a healthy meal, but they enjoy planning meal with parents.
- Quiz might be a good idea which is very popular and effective in children learning.

### Positive evaluations:

- The reward and competitive mechanism plays a significant role in motivating the children involve in the service and eat healthier.
- Children love the daily nutrition checking by using the toolbook at night.
- Children would love to cook with parents.

## Concept improvement #2

Change the reward about canteen volunteer into getting the double or triple points vouchers.

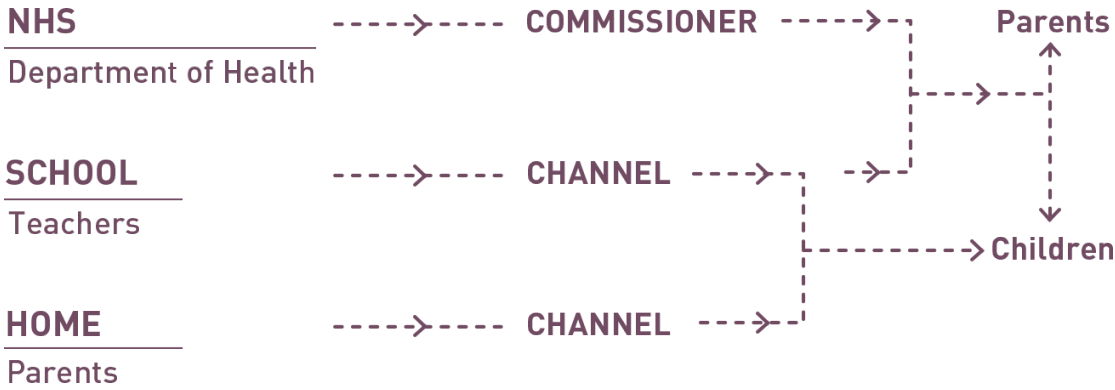


## Conclusion:

The two iterations gave the service a strong support, and a chance to get closer to the users and stakeholders. With all the suggestions and encourages, the design process was moving to the deliver phase.

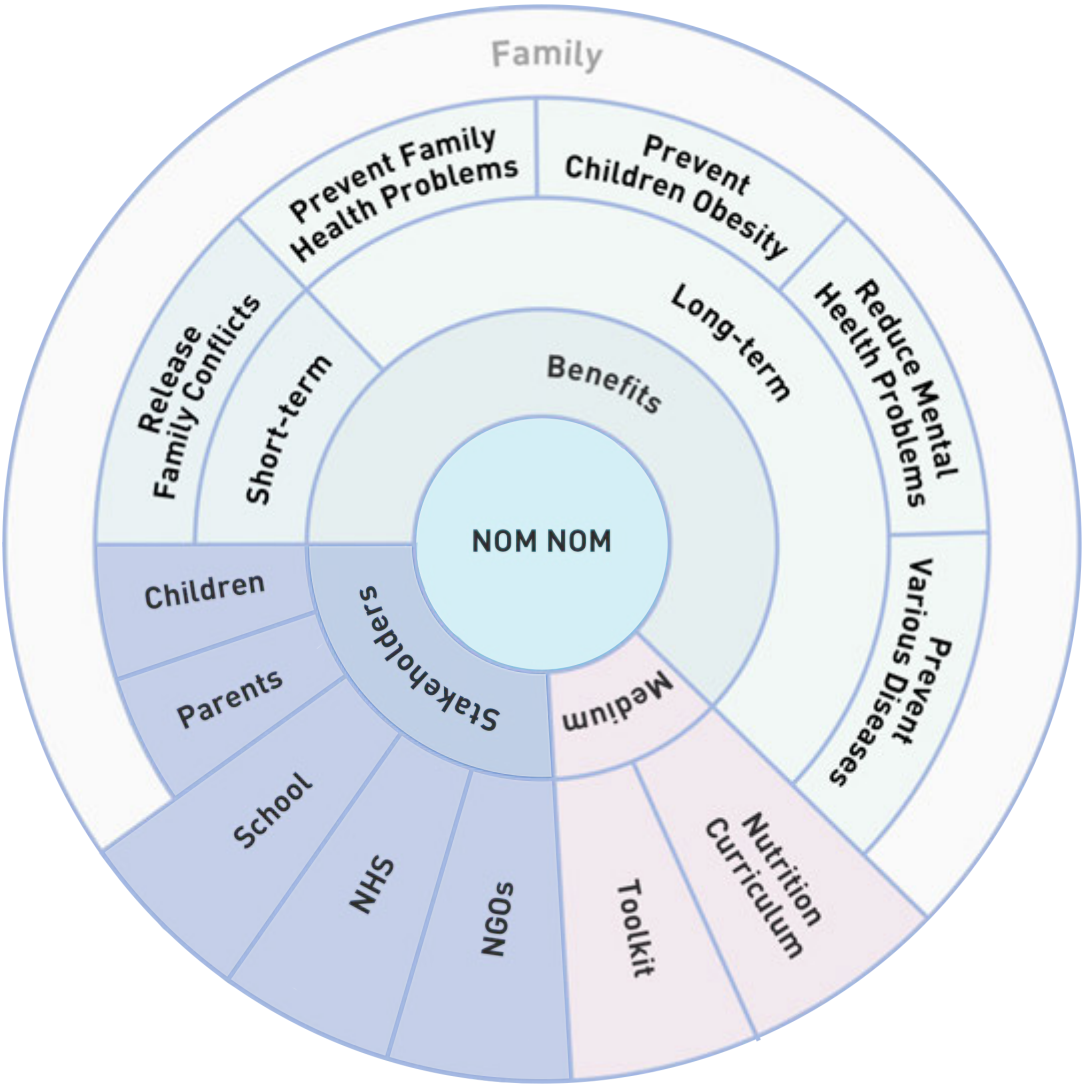
# CONCEPT DELIVERY

The final service concept “Nom Nom” was generated after a series of iterations and modification. Just like the map below shows, “Nom Nom” involves NHS, school, and family. NHS is the service commissioner who produces the “Nom Nom” service- the toolkit and weekly delivery service. The school and Home play the role of a channel which works for children, while both of the school and NHS serve for the parents and children.



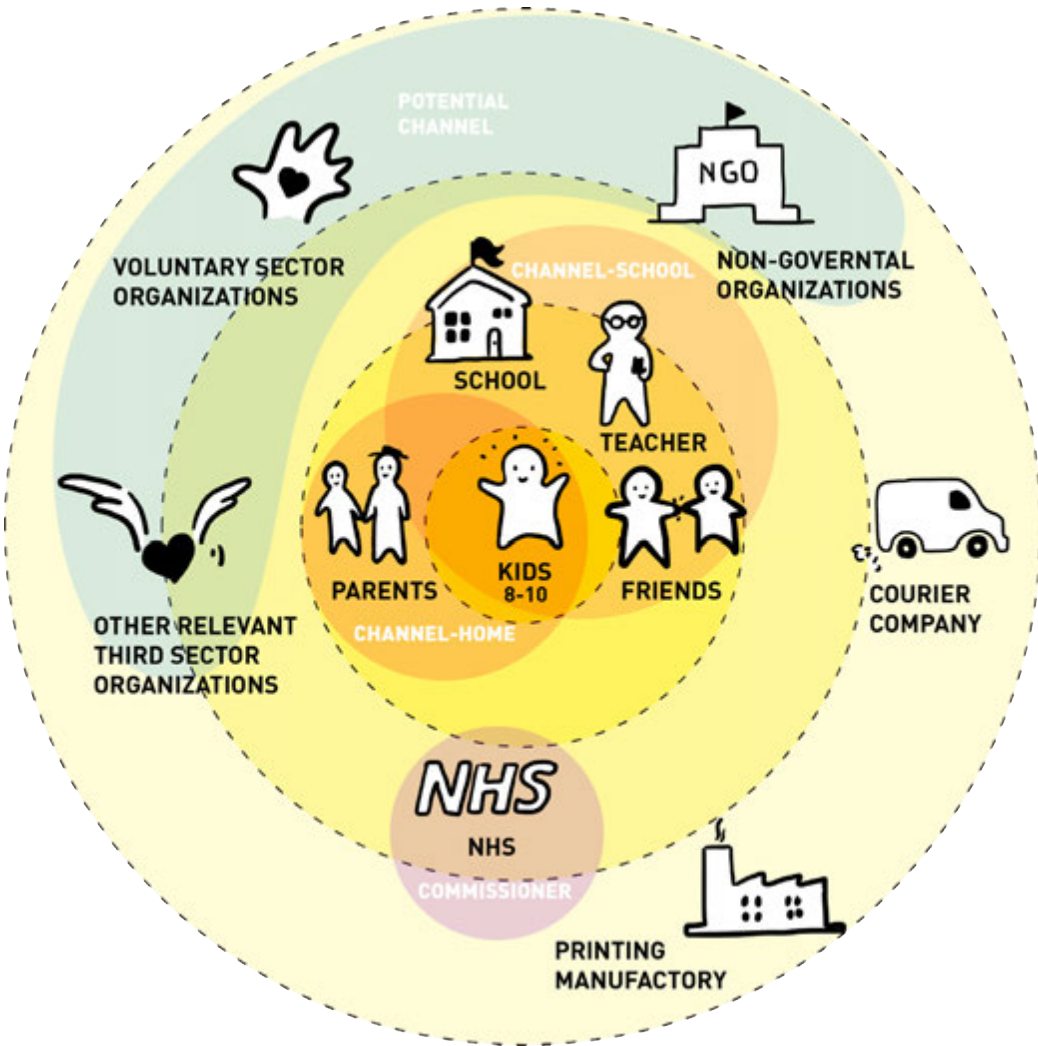
CONCEPT MAP

The concept map was built to better explain and conclude what this service about by simply demonstrating the main stakeholders, values, and medium.





# STAKEHOLDER MAP



# PERSONAS

After using the service

The new personas give a comparison between the “before” and the “after”. It helps quickly understand what value and difference that “Nom Nom” would bring to the different user group.



Matti-Children:

- Now Matti can’t stop using “Nom Nom” toolbook every day to do the daily nutrition check, and the characters at backside always surprise him.
- He has more interactions and communication with his parents and friends than before because of this service.
- He would like to eat everything for getting the reward and competing with friends
- He feels happy that his parents seldom force him to eat since he becomes less fussy.



#### Emilie-Parents:

- She enjoys the time of playing with kids by using “Nom Nom” toolkit.
- She also learned a lot of food knowledge which she never knows before.
- She has more empathy for child and knows the child’s eating preference better.
- She is excited that the child becomes less picky and eat vegetables consciously.
- Now she can see the children’s nutrition intake by using the toolkit everyday, which makes her feel reassuring.



#### Tina-Teacher:

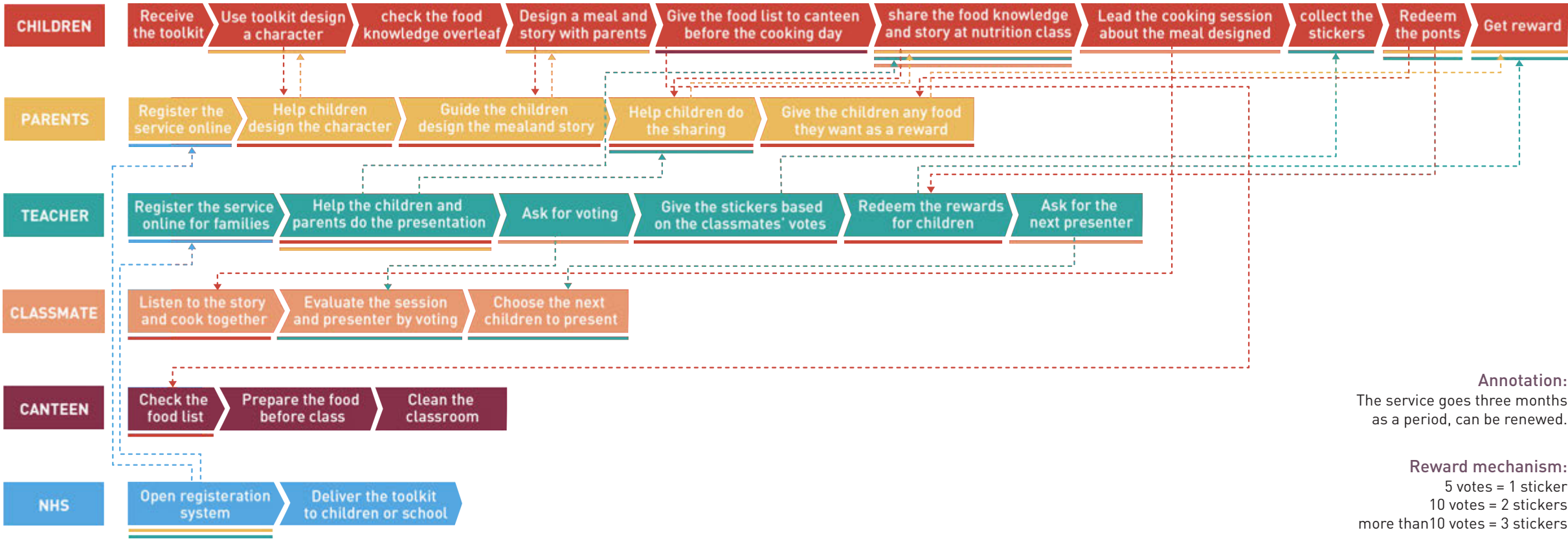
- Now she has more communication with children’s parents, which makes her work easier.
- The service shared her workload of taking charge of the nutrition class by involving the parents.
- The children have more motivation to learn the nutrition knowledge.

# CUSTOMER JOURNEY BLUEPRINT

The customer blueprint gives a large scope of the main interactions and touch points among the users and departments. As the blueprint below shows, the service chain was effectively connected and work in a thorough service ecosystem.

## At school - Nutrition class:

The first part of the service which would be done at school in the day of nutrition class. It gives the chance for children, parent, teacher, and other children to have more communication and bring a happy, engaging environment to the class.

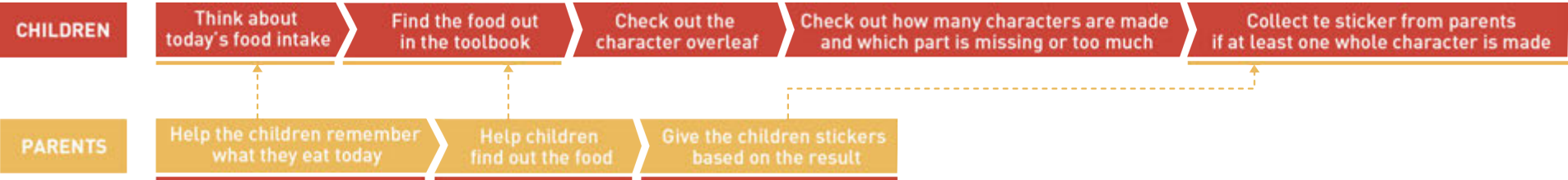


**Annotation:**  
The service goes three months as a period, can be renewed.

**Reward mechanism:**  
5 votes = 1 sticker  
10 votes = 2 stickers  
more than 10 votes = 3 stickers  
5 points = Any food  
Top 3 children with most points = double points coupon  
Top 1 children with most points each month = Add his designed meal to canteen

At Home - Night time:

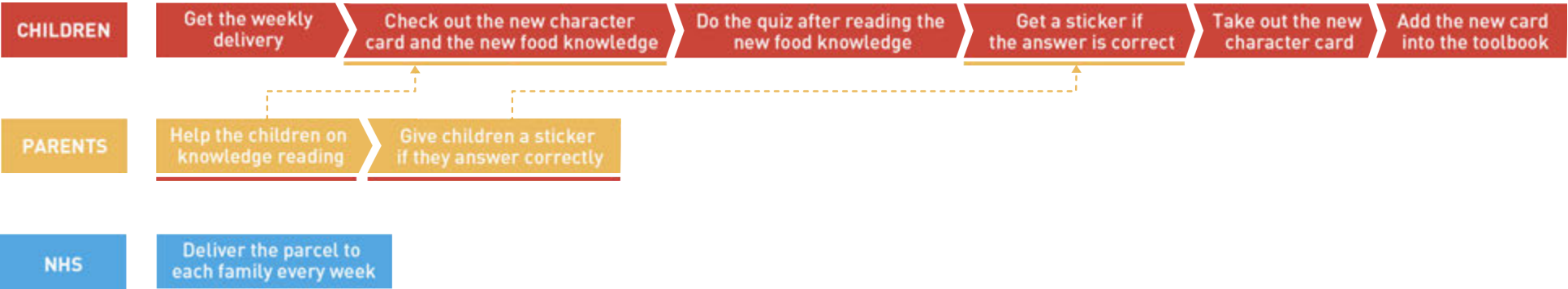
The second part of the service is family night-time activity. The children can use the toolkit to check out if their nutrition intake today is comprehensive. Also, the parents would have a clear sense of their children’s nutrition intake each day without anxiety.











At Home - weekly delivery:

The third part of the service - "Weekly delivery" helps the food information and categorises of the toolbox keep updating. Additionally, the quiz inside the delivery works well in quick knowledge learning.



BUSINESS MODEL CANVAS

<div>Key partners</div> <div></div> <div><ul style="list-style-type: none"><li>• Courier company</li><li>• Printing manufactory</li></ul></div>	<div>Key Activities</div> <div></div> <div><div>At home:</div><ul style="list-style-type: none"><li>• The child has to design a meal and a story according the the character they designed and the ingredients they get from the toolkit</li><li>• The child and parents lead the nutrition session and sharing their learning outcome (the food knowledge, cooking skills, the story...)</li><li>• Children and their parents could use the toolkits as a reference for their daily nutrition intake</li></ul><div>At school:</div><ul style="list-style-type: none"><li>• Teacher and classmate evaluate the nutrition session by voting and sticker</li><li>• The class decide the next child to lead the next nutrition session (run another cycle)</li><li>• Children collect the stickers and redeem the stickers into different level of rewards from parents or teachers (redeem any food/ get double-points coupon/ add special recipe to canteen menu)</li></ul></div>	<div>Value Propositions</div> <div></div> <div><div>For families:</div><ul style="list-style-type: none"><li>• In the short term, the service helps reduce the children physical health risk such as obesity and diabetes.</li><li>• In the long term, the service helps reduce the family mealtime conflict and prevent children mental health problems like rebellion by encouraging more communication between parents and children, and engage family members to create a pleasant and relaxed family environment.</li><li>• The service helps children develop good eating habits by adding gamification elements to the school nutrition curriculum to make the food knowledge easier to be absorbed by children.</li><li>• The families could get more help and better utilize the service provided by the tighter connections the service created among children, parents, school and relevant organizations</li></ul><div>For NHS:</div><ul style="list-style-type: none"><li>• The reward and promotion mechanism, the diverse toolkits and engaging themes, and the numerous NGOs and VSOs as potential channels in this service concept make this service ecosystem more sustainable and evolvable.</li></ul><div>For schools, NGOs, VSOs:</div><ul style="list-style-type: none"><li>• The flexibility and applicability of the concept challenges the traditional nutrition curriculum, also it gives more possibilities and choices to the children food education in the future.</li></ul></div>	<div>Customer Relationships</div> <div></div> <div><ul style="list-style-type: none"><li>• Establishes a bridge between the children and their living environment (family, school, society...)</li><li>• Works as a medium to help parents know more about their children and strengthen their relationship</li><li>• Enables families benefit from NHS's children health service in a more direct and efficient way</li><li>• Helps mobilize other organizations' resource to families</li><li>• Promotes the communication and cooperation within the organizations</li></ul></div>	<div>Customer Segments</div> <div></div> <div><ul style="list-style-type: none"><li>• Families with children age from 8-10 who don't have good eating habits or happy eating experience</li><li>• Primary schools with nutrition class [channel]</li><li>• NHS- Department of Health(DH)- Public Health England (PHE) [commissioner]</li><li>• Non-governmental organizations (NGOs) [potential channel]</li><li>• Voluntary Sector Organizations (VSOs) [potential channel]</li></ul></div>
<div>Key Resources</div> <div></div> <div><ul style="list-style-type: none"><li>• The register system</li><li>• Characters updating for each week</li><li>• Food knowledge consultation</li><li>• Manufacturing line for toolkits</li><li>• The vans for delivery</li></ul></div>			<div>Channels</div> <div></div> <div><ul style="list-style-type: none"><li>• NHS website</li><li>• School website/noticeboard</li><li>• GNOs' and VSOs' websites</li><li>• Social media</li><li>• Mail</li><li>• Word of mouth</li></ul></div>	
<div>Cost Structure</div> <div></div> <div><ul style="list-style-type: none"><li>• Salary for web designer to develop register system</li><li>• Salary for graphic designer to design the new characters</li><li>• Salary for the nutritionist to review the food knowledge</li><li>• Produce the toolkits</li><li>• Delivery</li></ul></div>			<div>Revenue Streams</div> <div></div> <div><ul style="list-style-type: none"><li>• NHS</li><li>• Third sector organizations</li><li>• Any organizations relevant to health and nutrition</li></ul></div>	

## FUTURE DEVELOPMENT

If a service is expected to be longevous, it ought to equip with high sustainability and potentiality. A good service always comes from the numerous testing and iterations, and it never stops because the times change by leaps and bounds. To maintain the sustainability and develop the service with the changes is the eternal issue which worth to be discussed, the same for “Nom Nom”. As the children grow up quickly, their mind differs day by day. How to strengthen the flexibility and keep the same pace with the children’s growth is the key point to augment the sustainability of “Nom Nom”.

Firstly, combined with digital might be one of the possibilities. The digital touch points could help the service and communication work more smoothly, also gives children different experience on sense judgment. The database is easier to record and analyse the trend of children’s eating habits changing, so that the service could be developed and modified in the meantime.

Besides, as one of the feedbacks from school, the idea that leaving parents or children to lead the cooking class was put forward. This kind of diversified teaching method which could bring the fresh air to the existing education model can be looked into further.

Moreover, for now, the main users of “Nom Nom” is basically around children, parents, and school. However, a large number of NGOs and other organizations relevant to nutrition and children are another huge user group for “Nom Nom”, which is an enormous potential. Therefore, engaging more people and organizations to join the service network and bring new values to the existing service is the thing worth to think about in the next step.

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NOM  
NOM

Healthy eating, Happy living.

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