MASTER THESIS

HANDMADE EDUCATION

INTERACTIVE FOOD FOR CHILDREN'S LEARNING

IMPRINT

HANDMADE EDUCAITON :
interactive food for children lerning

Master Thesis
Malinee kulrakumpusiri

Summer semester 2016

Advisors :
Prof. Bernd Hennig
Prof. Carmen Luippold

MAID Master of Arts Integrated Design
Department of Design
Anhalt University of Applied Science
Gropiusallee 38 D-06846 Dessau, Germany

Printing and Processing
Grafische Werkstatt der Hochschule Anhalt

HANDMADE EDUCATION

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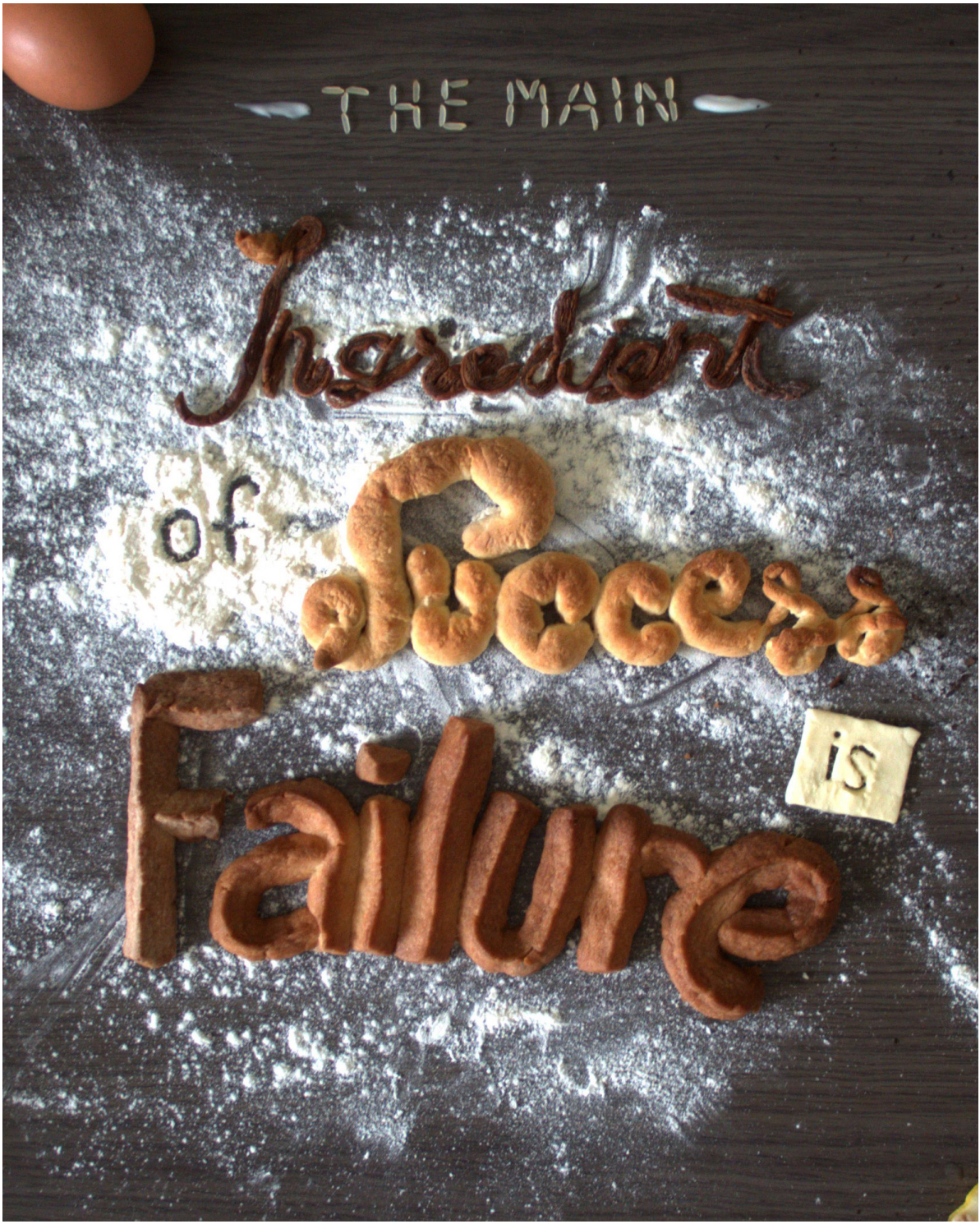
THE MAIN
Ingredient
of
Success
is
Failure

MOTIVATION

Before the colonial era, Thais used their hands as the main cutlery, such that every rice kernel that touched their hands will remind them to be thankful to the holy spirit of the nature that feed them. In Asian Culture, food symbolizes the satisfaction of one's soul. We were taught to respect food with love and to be grateful for every meal we had. "Do not Play with food" is a very common sentence adults say to children in my country, and may be in the rest of the world too.

I don't remember if my parents ever said that to me, but I always treat my food nicely as far as I remember. It has been a long 28 years of relationship between me and food. I love to eat and always treat my meal the way people are supposed to...Food is supposed to be eaten properly. But, the only thing that I fail in this relationship is "cooking good food"

Last semester, I did a project on Typography Poster, reflecting my failure story. I used my failure in cooking as the theme. So, I created all my typography with food ingredients. That was my first opportunity to play with food; I liked the time when I shaped the bread dough into words, baked them, and laid them out for a photo. I began to see food with a different perspective, with other purposes rather than eating. Play doesn't mean I disrespect food. Instead, I am grateful and thankful to food as a teacher that open a new door for creativity.

A great teacher doesn't teach, but let students explore. Starting from a well-made to a canned meal, I have explored many failed experimental dishes and international dishes from friends. No food was wasted and I benefited from it. I learned to survive from my own cooking, I learned how others cooked, and I learned to enjoy the social interaction that came with the experiences. Isn't it wonderful to learn from food?

INTRODUCTION

Back to the early age of human history, Human thought of food as any substance that provides nutrition for the body. Man needed to hunt animals for food. Nowadays, Food is consumed not just to stop hunger of the body, but it also feeds the souls. Food has already been used for many other objectives apart from eating such as for artistic creations and creative marketing campaigns. Likewise, this research will also show a new perspective of food – Food as an educational material for children."

Children are taught to be polite and follow the rules. One of the classic universal rule is to not play with food. Therefore, encouraging children to play with your food may sound absurd. However, Anne K. Fishel, a food blogger, posted six reasons why your kids should play with food. and one example is "playing with food engages the scientific and artistic experience by learning the shape, colour, and experimentation."

Most importantly, food stimulates human sensorial integrations; texture, visual, taste, smell, hear. Sensorial development is important for young children development. This is one reason why pre-school sometimes uses food sensory bins as activity for children to promote sensorial play. The sensorial integration has been the key factor of European early childhood education since 18th century. Maria Montessori, the inventor of optional early childhood education believed that all children are born as sensorial explorers. To their senses, the children study their environment. Through such experiences, children develop skills and characters.

Food has characteristic that responses to human sensorial integrations..... is important for young children.

To their senses, the child studies his environment. Through this study, the child then develop to a whole person.

The act of exploring is a part of kids playing. Playful experiences are learning experiences. Most playing involves exploration, investigation, self-motivated and fun. Thus, anything learned during play isknowledge gained without the perception of hard work. Friedrich Foerbel, the inventor of kindergarten, also believed in play-based learning method. He implemented Gift which is perhaps the first educational toy set, presenting sophisticated approach to childrendevelopment through play.

In conclusion, playing with food is one method that children can learn through senses. This research emphasizes the idea of play-based learning by using food as a medium. By doing so, kids will subconsciously learn through physical sensory and through entertaining circumstances. Content of this book contains researches, experimentations, and development processes. The outcome is a baking kit for kids under the philosophy of play-based learning. Aside from practicing sensory integration through bakery, the kits have been designed to blend in easy academic lessons to ignite their interest of studying.

PROBLEM STATEMENT

Apart from project motivation, another question to consider is “how can we play with food in the right way?” The question led to another question “What is the wrong way to play with food?”

Playing is a big part of our childhood. Children are encouraged to play, and sometimes with food such as the sensory bin at some kindergarten and pre-school to improve their sensory integration. The method have been proven very useful but still, some people question the necessity of using food in the activity.

Playing with food could be sensitive issue when the world is facing poverty, environmental disaster, toxic, global warming, and many more. No food should be wasted. In contrary, the opposite party claims that food is the best material because it, firstly, is the easiest material to find and it can stimulate children’s nervous system in ways that non-food sensory subjects can not. Secondly, children who play with food are more exposed and thus more familiar to different kinds of food; hence, they tend to accept new food better and show less picky eating habits.

In conclusion, the right way to play with food happens under these two criteria. First, Food should not be wasted. Second, Play should benefit the player.

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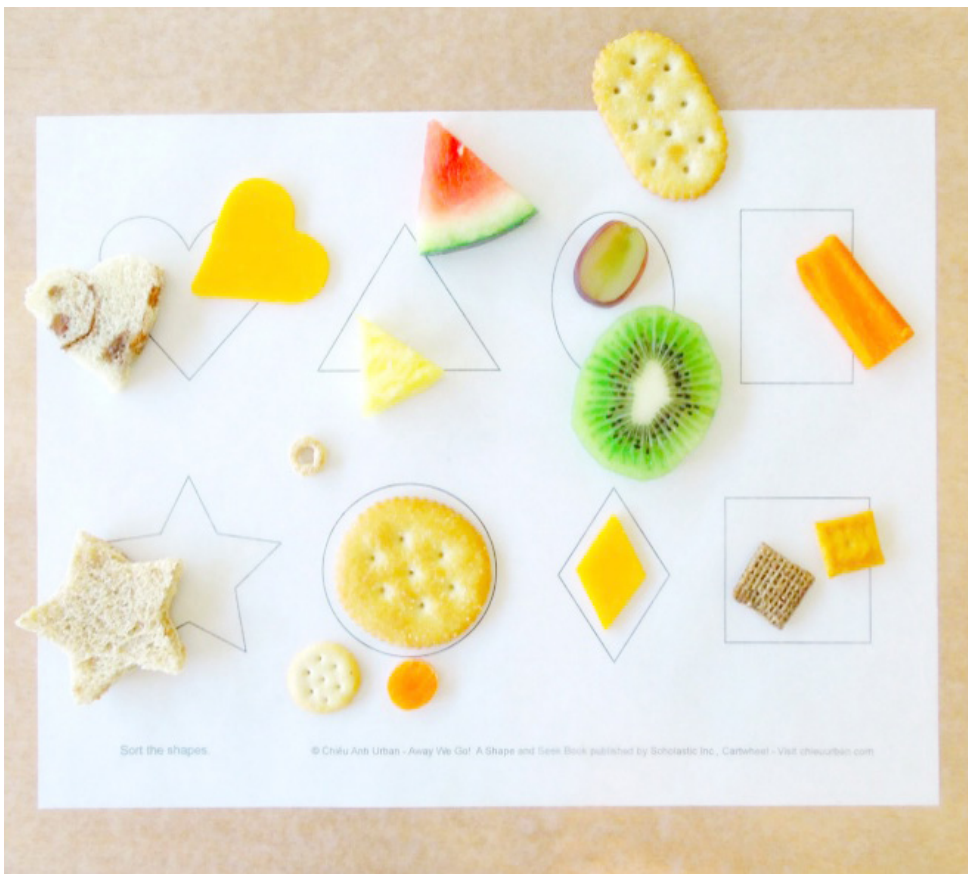

Sort the shapes.
© Chiêu Anh Urban - Away We Go! A Shape and Seek Book published by Scholastic Inc., Cartwheel - Visit chieuurban.com

2

PROSPECT TARGET

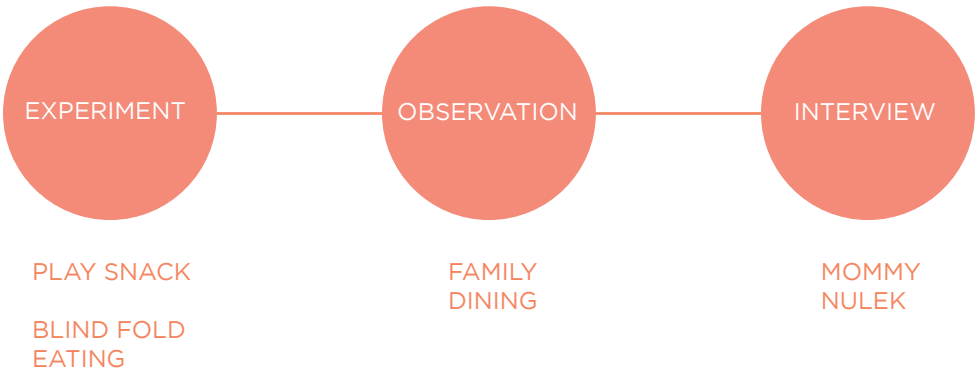
In relation to the problem statement, playing with food tend to be associated to kids. Thus, the target group is initially assumed to be in a broad range of age, from pre-school to early primary. The research should scope down the target group or enhance another prospect.

After the research has been done, we concluded that the target groups can be divided into 2 groups. First, the primary target of whom are children age 5 to 10 years old. The secondary target are the parents who are usually the decision maker in buying process.

02.RESEARCH

RESEARCH METHODOLOGY

RESEARCH STAGE



FIRST STAGE

The first starting point of research was the experiment, observation and interview with mother Nulek. To find the interaction between kids and food, observation gave insight on how a kid handles cutlery and how kid interact with food.

Then, the interview with mother Nulek led to possible solution and direction of the research.

FOOD

CHILDREN

PLAY

BAKING WITH KIDS

SECOND STAGE

The second stage began after gathering the possible direction from th first phrase. Research cover three crutial keywords of the thesis, which are food, children, and play-based learning. The experiment is the process in concept section.

THE FIRST EXPERIMENT

BLINDFOLD - EATING

RESULT

The first intension was to have them bare-handed eating and described the food. However, the plan changed because they opened their eyes. The test is to experiment on senses and eating tools

By using eating tools, their tactile sense was completely lost. They had a hard time to pick up the food. Moreover, some of them use wrong side of the spoon which made her unable to pick up anything.

SNACK PLAYING

RESULT

One hour experiment on playing with snack. The participants enjoyed playing with snack and got more creative time after time. Somehow, They did not want to eat snack after all because they think all the snack are dirty by hands.

OBSERVATION

FAMILY DINING

When the restaurant was informed that we had a kid, they brought us a set of Mickey Mouse plate and cutlery.

Prom (Kid's name) was 3 years old and not acquainted with using spoon and fork. She usually leaned her head down to the plate and eat from the side of the spoon.

Her hand muscle was still weak. While holding a small spoon in her right hand, she needed to hold on to the table with her left. When she failed to scoop food up from her plate, she used her left hand to pick up the food.

INTERVIEW

Nulek (Hatairath Simavara)
Bachelor of education, major early childhood education
Now, she is the mother of 2 children.

INTERVIEW WITH MOMMY NULEK

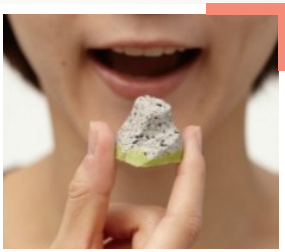
Nulek is a perfect interviewee for the research. Her background education and her status as a mother, somehow, give valuable information for the research

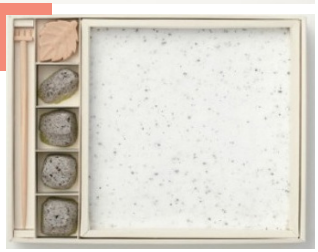
Nulek does believe that food could be a medium for communication. She always let her kid do messy eating at home. For playing, she does not totally agree. She need to consider means of plaing with food, because if the playing is a cause of bacteria transfering to food, she will not definitely allow her daughter to eat after playing. Nevertheless, if the playing is designed for useful eating system, such as, decorating food, cooking food, or practicing hand muscle, she would love her kid to play.

Though, she does not know how to cook, she wish her daughter could learn cooking since a young age, becuase she wants to shape good attitutes toward food. Also, she believes that her kid will learn a lot from interaction with food. Plus, she will not force her kid to eat what she does not want to, but she will prefer to adjust her daughter's attitute time gradually until she is ready to eat them.

For education topic, she suggested that kids should learn everything surround them first. Thus, it should be something easy to comprehend.

INSPIRATION





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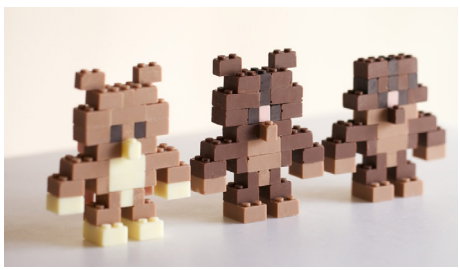
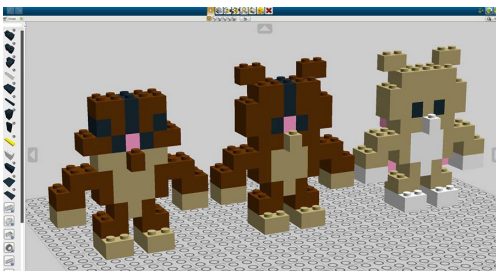
SHIN-AN-JI ROCK GARDEN

In busy Japanese society, the zen garden inspired meditative state of calm and relaxation. “In cities today, people do not have the luxury of gazing at gardens,” says Japanese designer Tomonori Saito. He designed Shin-an-ji Rock garden from black sesame and sugar. His intention was to share the same philosophy the real Zen garden has. It was supposed to calm the hunger and slow a sudden urge to put food in your mouth.

This is the most relevant reference project. It expressed interactions between food and eaters. It also conveyed the message the designer want to say. Most importantly, the design was simply perfect in reflecting the philosophy behind it and the food was not wasted.





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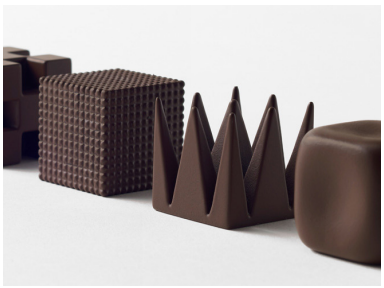
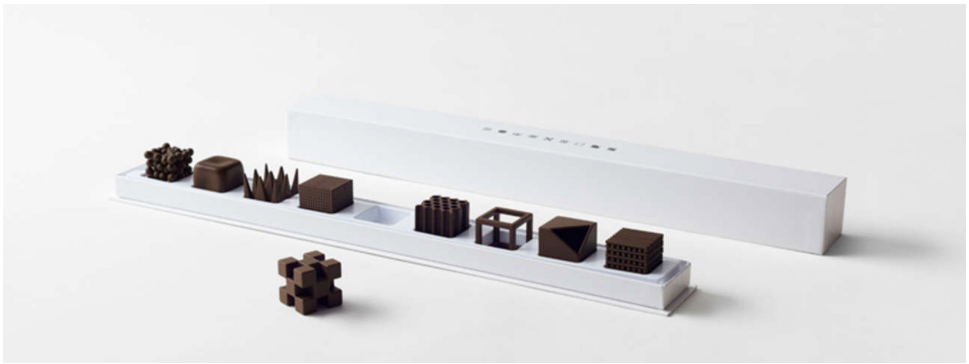
LEGO CHOCOLATE BEAR

Japanese illustrator and designer Akihiro Mizuuchi decided to do something special for Valentine's Day this year. He created his own chocolate LEGO bricks and then built chocolate LEGO teddy bears with them.

Undeniably, everyone loves Lego. Lego chocolate is a very creative mean to play with food that will lure all kids to play and eat them. Somehow, chocolate might not be good for playing because it melts in your hands.





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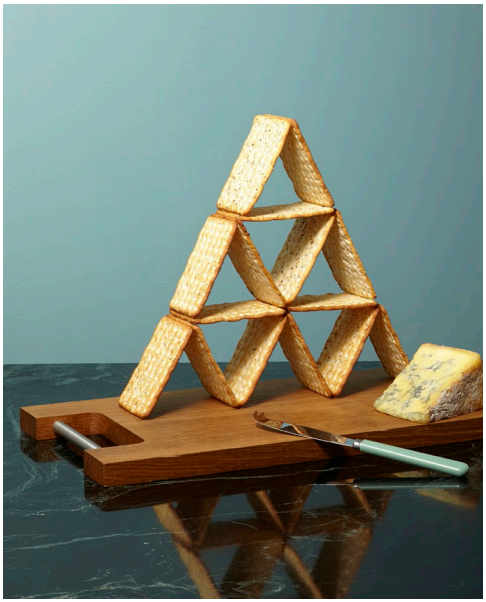
NENDO CHOCOLATE
For Maison et objet 2015

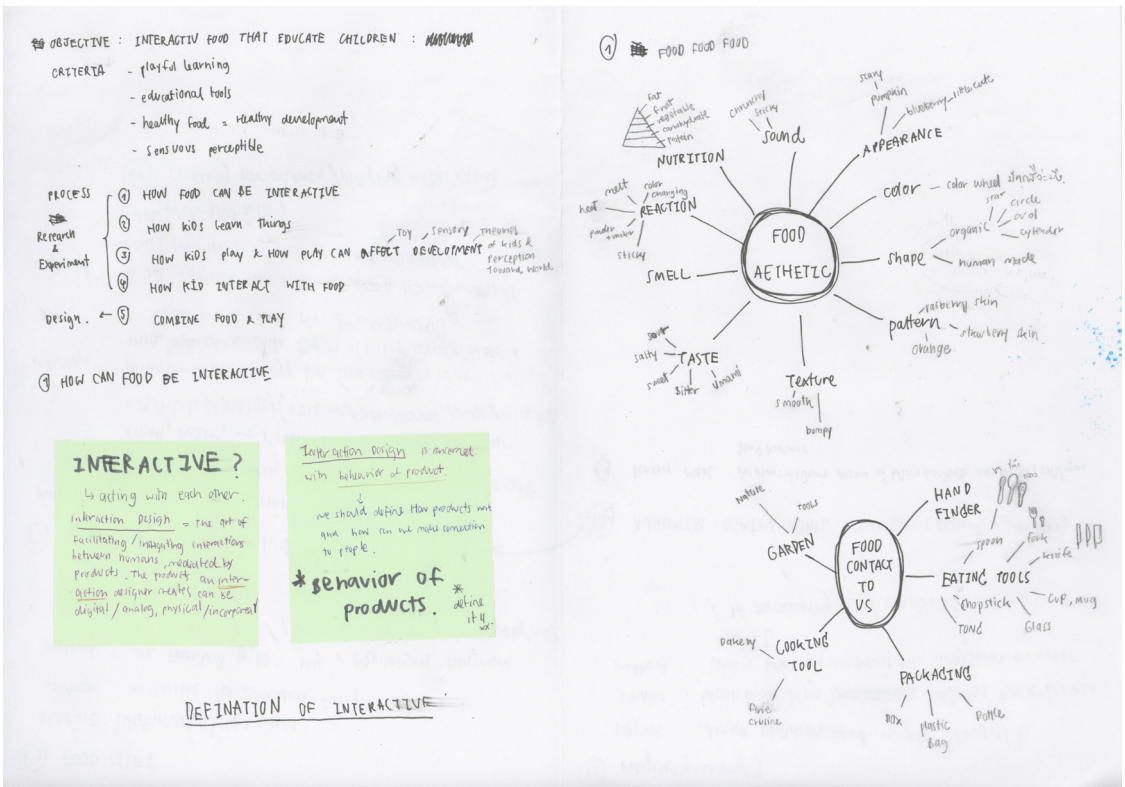
Nine different types of chocolate were featured. They all had different textures and shapes; pointed tips, hallow interiors, smooth and rough surfaces. The shapes represented ingredient of each piece. And, each distinctive texture created different tastes. It was a very interesting project, designing haptic in the food.

By translating flavors and percentage content into shapes, the chocolates were actually communicating through their appearances. This could be a new kind of interaction between food and human.



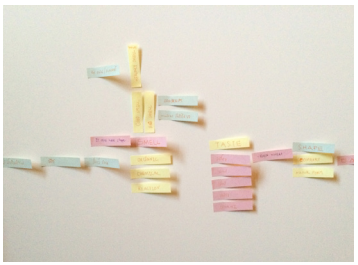
THE HUNGER GAME

This is an article from Kinfolk magazine introducing a photo set from a professional photographer. By setting scene and some decoration, can turn normal food into stylish plaing games.


OBJECTIVE : INTERACTIV FOOD THAT EDUCATE CHILDREN :
CRITERIA - playful learning
- educational tools
- healthy food = healthy development
- sensuous perceptible
PROCESS
Research & Experiment
① HOW FOOD CAN BE INTERACTIVE
② HOW KIDS learn things
③ HOW KIDS play & HOW PLAY CAN AFFECT DEVELOPMENT
④ HOW KID INTERACT WITH FOOD
Design. ⑤ COMBINE FOOD & PLAY
① HOW CAN FOOD BE INTERACTIVE
INTERACTIVE ?
↳ acting with each other.
Interaction design = the art of facilitating / instigating interactions between humans, mediated by products. The product an interaction designer creates can be digital / analog, physical / incorporeal
Interaction design is concerned with behavior of product
↓
we should define How products work and how can we make connection to people.
*behavior of products.
DEFINATION OF INTERACTIVE
① FOOD FOOD FOOD
NUTRITION
SOUND
APPEARANCE
COLOR
SHAPE
PATTERN
TEXTURE
TASTE
SMELL
REACTION
FOOD AESTHETIC
FOOD CONTACT TO US
HAND FINGER
EATING TOOLS
PACKAGING
COOKING TOOL
GARDEN

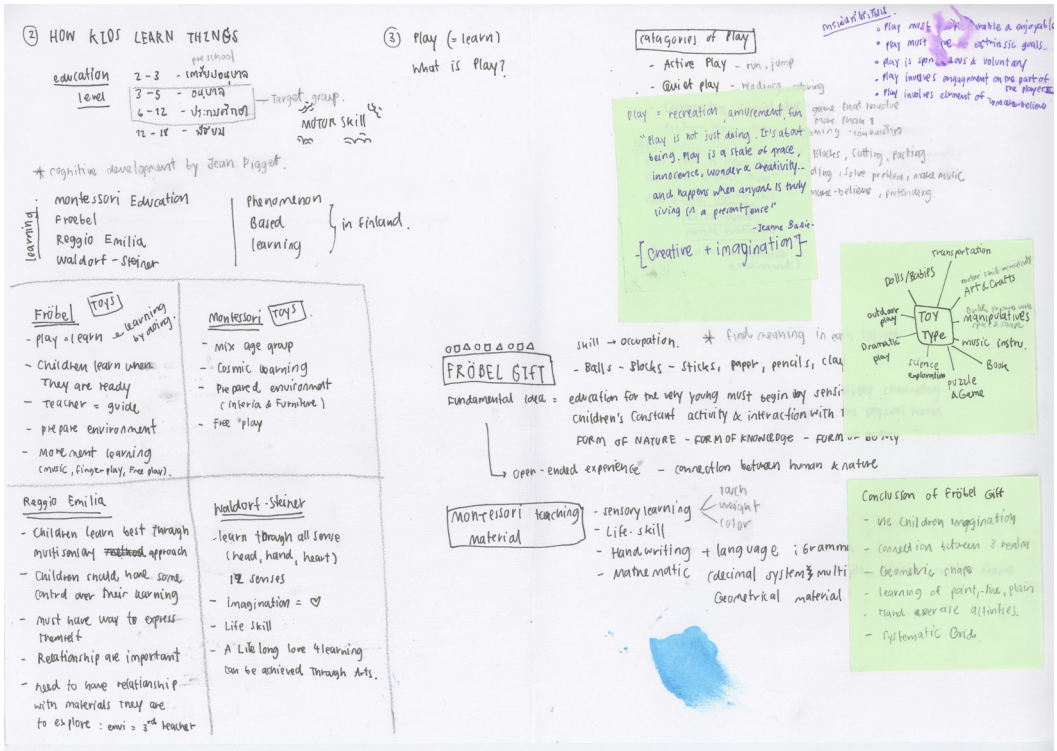

GOAL
GARDEN
COOKING TOOLS
PACKAGE
FOOD CONTACT TO US
EATING TOOLS
HAND
SOUND
COLOR
SHAPE
APPEARANCE

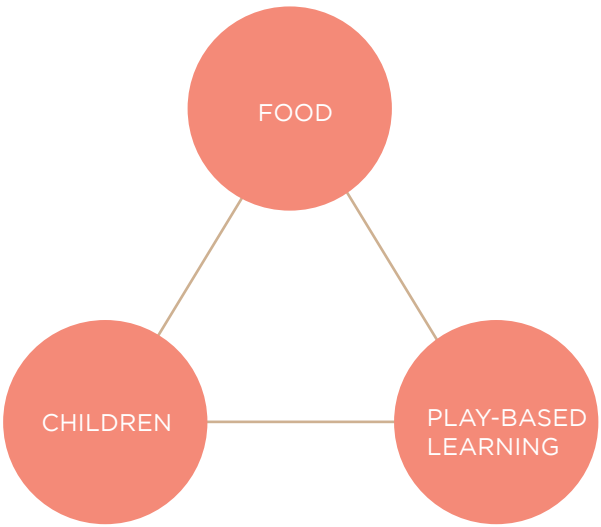

REACTION
FOOD AESTHETIC
PATTERN
TEXTURE
SMELL
TASTE
EATING TOOL
INTERACTION FOOD DESIGN
HEALTH PROBLEM



METRIX CHART

The observations, experiments, and interviews give the overview of how people interact with food. To have a clear vision of how food interacts with human, this matrix chart shows many possible pathways to the next steps.





Three areas of research

RESEARCH DIRECTION

As the objective of this research is to introduce playful food as educational toys for children. There are three main areas of research that are highlighted; food, Children and play-based learning.

01 Food

FOOD AND HUMAN

Undoubtedly, Food is one of the most important factor in human life; one of four living factors. Back to the early age of human history, people perceived food as merely any substance that provides nutrition for the body. Nowaday, revolution of diet changed the perceptions. There are more than hundred styles of cooking around the world. Eating to fill up stomach is not the reason for dining in a five-star restaurant. When you are dining in an expensive restaurant, you would expect artistic dishes, premium ingredients, fabulous taste, and everything that provoke your emotions and senses. We are always subconsciously interacting with food. It is interesting to see what food is saying to us.

HOW FOOD CAN BE AN INTERACTION OBJECT?

Definition of interaction

Basically, interaction is an action of a two-way communication

The translation of interaction on Dictionary.com is “a mutual or reciprocal action or influence.” Basically, interaction is an action of a two-way communication. People mostly misunderstand that interaction has to be between human and machine. According to the dictionary, this word covers the interactions of all things, while interactive is used mainly for online activities. Interaction design requires the art of facilitating or investigating interactions between human that is mediated by the products. The products can be digital, analog, physical or incorporation.

The function of interaction is not only to deliver message, but also to trigger positive emotions from the users toward the product. In this case, the function would be to mediate interactions between kids and food which would result in the kids having positive thoughts toward food through the learning process.

FOOD AND CHILDREN

Playing with food is about so much more than making a mess. It allows for sensory stimulation, getting used to food, and is a big part of learning to like new foods. A research from Developmental Science Journal showed that the children who interacted most with the foods by poking, throwing, feeling or eating them were most likely to correctly name and identify them by their texture

children who interacted most with the foods by poking, throwing, feeling or eating them were most likely to correctly name and identify them by their texture

American institute for cancer reserch launched a new program, called 'healthy kids today-prevent cancer tomorrow', encouraging kids to cook since very young. They state that kids can learn to cook at age 2 with supervision from parents. They advice the appropriate activites in the kitchen for kids at each stage:

2-3 years old
At this age, kids can help sorting, preparing, and adding ingredient. Though, they should avoid dealing with heat or sharp tools.

4-6 years old
Kids can start to read recipes, count and do simple measurements. Plastic knives are allowed to use. They can mix, pour, and crack eggs. Push the start and stop button on food.

7-12 years old
In the kitchen, kids can use knifes, peeler and work with heat source, but under supervision only. Since they can manage to do most of everything by themself, they can follow recipes or even create their own recipes. Outside the kitchen, they can help with the shopping list and gather ingredients.

BENEFIT OF COOKING FOR KID

BONDING EXPERIENCE
Communication: A relaxed atmosphere in the kitchen offers an opportunity to talk, about anything! Parents can take advantage of this, especially with teens, as communication is a key element to raising a well-adjusted, healthy child.

BOOSTS SELF-ESTEEM
Cooking allows kids to get instant feedback, which helps them learn and grow in self-knowledge. Learning a new skill, such as baking or cooking, is known to help grade school children with healthy self-esteem development.

TEACHES CHILDREN LIFE SKILLS
Cooking is a life skill, much like driving a car, learning to read, or swimming. As children grow and get closer to adulthood, the job of feeding becomes theirs. Start the cooking lessons at a young age so the transition to adult cook is easy later on.

USES BASIC MATH SKILLS
Kids often do not realize that they are practicing math. Doubling a recipe requires addition (or multiplication) skills, halving it requires division, and recipe fractions like 1/2 cup and 3/4 teaspoon bring math applications into the kitchen.

ALLOWS SCIENTIFIC OBSERVATION
Cooking is a science experiment. Cooking provides an opportunity for kids to get hands-on experience with basic science when foods change form.

PROMOTES PRACTICING HOW TO FOLLOW DIRECTIONS
Reading and understanding step-by-step directions, adding ingredients in sequence, and techniques are all important components to yielding the finished food product. Helping children fine tune reading comprehension skills at the same time.

ENCOURAGES CREATIVITY
Food's colors and textures create opportunities for artistic expression. For example, kids can make a simple pretzel dough, and have their hands goopy and sticky making shapes and letters. As Marcella Hazan stated, "Cooking is an art but you can eat it too." Moreover, kids who have fun with cooking will be more likely to eat their creations.

CREATES OPPORTUNITY TO DISCUSS THE SENSES
Making food is one of the few opportunities to use touch, smell, sight and taste all at once. Parents can create small sensorial play activities in the kitchen.

7

These are few benefits children get from food. There are existing projects that educate children about food or use food as a medium for learning.

PROJECT ANALYZATION

FUNNY FOOD ARTS

Claire and Bill Wurtzel lead fun workshops in NYC schools to improve children's eating habits. Children learn the
importance of a healthy and balanced breakfast; the meal that sets the tone for the day and helps them stay focused in school.

The workshop models how to create imaginative breakfasts combining food groups that follow Choose-MyPlate.gov guidelines.

In this hands-on, playful atmosphere, knowledge on nutritions are learned and remembered. While these workshops are successful, the goal is to integrate them into an initiative that fight obesity and that has the resources to make the learning sustainable.

This project could be the best reference for the research direction, because it is simple and very creative. As the research says that kids tends to eat food they created, even those food are fruits and vegetablr.

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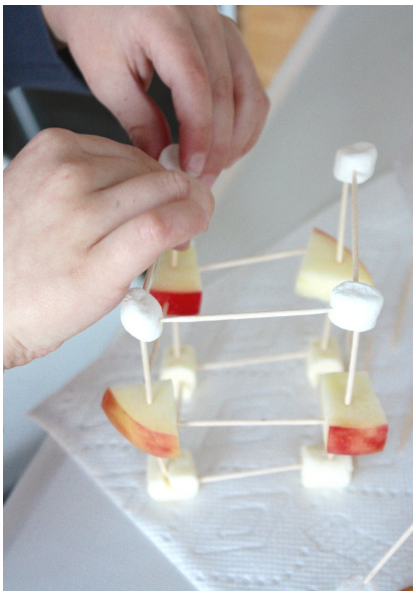

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EDIBLE STRUCTURES FOR SNACK TIME ENGINEERING AND STEM

Little bin for little hands website is an online community for parents. The platform gathers articles and ideas about sensory play. Most of the contents are posted by parents and children specialists. They share information on playful activities, books, and products which benefit children development.

SNACK TIME ENGINEERING is an activity introduced by a parent. The system of slowing down the eating process and adding more fun to the interaction.

“This easy snack time engineering activity kept him far busier than the time it would take to just consume the snack and move on to the next activity. You can make it as healthy or unhealthy as you want by throwing in jelly beans or gum drops too”, he suggests.

The idea of slowing down eating process is very interesting. Kids less than 10 years old are explorers. They could enjoy small activities and learn something from the food, instead of taking the food as the way it is.


CUISINE
R-EVOLUTION
MOLECULAR
GASTRONOMY KIT
ENSEMBLE DE CUISINE
MOLÉCULAIRE
Ls
AS
Lc
Gx
Aa
R

10

11

12

MOLECULAR GASTRONOMY KITS

The Molecular Kits encourage people to try and learn easily about molecular dishes at home. Molecular Gastronomy is a new innovative dining experience that blends physics and chemistry to transform the tastes and textures of food.

it is a style of cuisine that investigate and explain the chemical reasons behind the transformation of ingredients, as well as the social, artistic and technical components of culinary phenomena.

It is indeed interesting for people who love to play with food in artistc and scientific way. There are also some easy dishes that suitable for kids.

02. CHILDREN

children are just beginning to learn how to learn. Though language development, and thus thought, does begin during this time, the more major tasks occurring during this period involve children figuring out how to make use of their bodies. They do this by experiencing everything with their five senses, hence “sensory,” and by learning to crawl and then walk, point and then grasp, hence, “motor.”

Jean Piaget (1896 - 1980) was the first psychologist to make a systematic study of cognitive development. His contributions include a theory of child cognitive development, detailed observational studies of cognition in children, and a series of simple but ingenious tests to reveal different cognitive abilities. Piaget believed that children go through 4 universal stages of cognitive development. A child’s cognitivedevelopment is about a child constructing a mental model of the world.

Piaget has been extremely influential in developing educational policy and teaching practice. His theory is based upon biological maturation and stages, the notion of ‘readiness’ is important. According to Piaget’s theory children should not be taught certain concepts until they have reached the appropriate stage of cognitive development. Children learn best through doing and actively exploring. Learning by discovery and the importance of the evaluation of children’s progress - teachers should ‘not assume that only what is measurable is valuable.’

CHILDREN DEVELOPMENT STAGE
by Jean Piaget

0-2 years

Sensorimotor stage

children are just beginning to learn how to learn. Though language development, and thus thought, does begin during this time, the more major tasks occurring during this period involve children figuring out how to make use of their bodies. They do this by experiencing everything with their five senses, hence “sensory,” and by learning to crawl and then walk, point and then grasp, hence, “motor.”

2-7 years

Perceptional stage

During the preoperational stage, which often lasts from ages two though seven, children start to use mental symbols to understand and to interact with the world, and they begin to learn language and to engage in pretend play. Thinking is still egocentric, and the infant has difficulty taking the viewpoint of others.

Average age range for
entering school system

Pre-schoo age
2-5 years old

8-11 years

Concrete Operational

In the concrete operational stage that follows, lasting from ages seven through eleven, children gain the ability to think logically to solve problems and to organize information they learn. Children can conserve number (age 6), mass (age 7), and weight (avge 9). Conservation is the understanding that something stays the same in quantity even though its appearance changes.

12 years and over

Formal operational

during this stage, which often lasts from age eleven on, adolescents learn how to think more abstractly to solve problems and to think symbolically, for example, about things that aren't really there concretely in front of them.

Primary school age
6-12 years old

High school age
12-18 years old

NATURE OF PRESCHOOL AGE CHILDREN

Children want to touch, taste, smell, hear, and test things for themselves. They are eager to learn. They learn by experiencing and by doing.Preschoolers learn from their play. They are busy developing skills, using language, and struggling to gain inner control.

Fears often develop during thepreschool years. Common fears include new places and experiences and separation from parents and other important people. Five, six and seven-year-old children are often excited about going to school and their new responsibilities. Their parents are still the most important persons in their lives.

The transition from Preschool to primary school can be challenge for children. Parents can notice acute development in physical, cognition, and emotion. Five, six and seven-year-old children are often excited about going to school and their new responsibilities.

NATURE OF SCHOOL AGE CHILDREN

In early school age, by age 5, most children are ready to start learning in a school setting. The first few years focus on learning the fundamentals. In 3rd grade, the focus becomes more complex. Reading becomes more about the content than identifying letters and words. An ability to pay attention is important for success both at school and at home. A 6-year-old should be able to focus on a task for at least 15 minutes. In older school age, a 9-year-old child should be able to focus attention for about an hour. Children are very active with lots of energy at this stage. Their motor skills have become much better. They have gained control major muscles which benefit them a good sense of balance.
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03. PLAY-BASED LEARNING

According to abundant of research, scientific studies claim that children gain the most experience and learn through PLAY. The very first experiment on brain growth correspondent to play was first published in 1964 by Marian CleevesDiamond and her colleagues. However, the experiment was tested on rats. She found that rats in exciting, toy-filled colonies developed thicker cerebral cortices, bigger brains and smarter thought than rats in boring environment. Scientist suspected that the increased levels of brain-derived neurotropic factor could be the same in human. Since then, abundance of research on brain growth relating to playing became more noticeable.

Since a very young age,, playful experiences are learning experiences. Most play involves exploration, investigation, self-motivation and fun. Thus, anything learned during play is knowledge gained without the perception of hard work.

For example, a recent study - “The Power of Play” from Dr. Rachel E. White from Minnesota play museum supports the idea of play based learning .

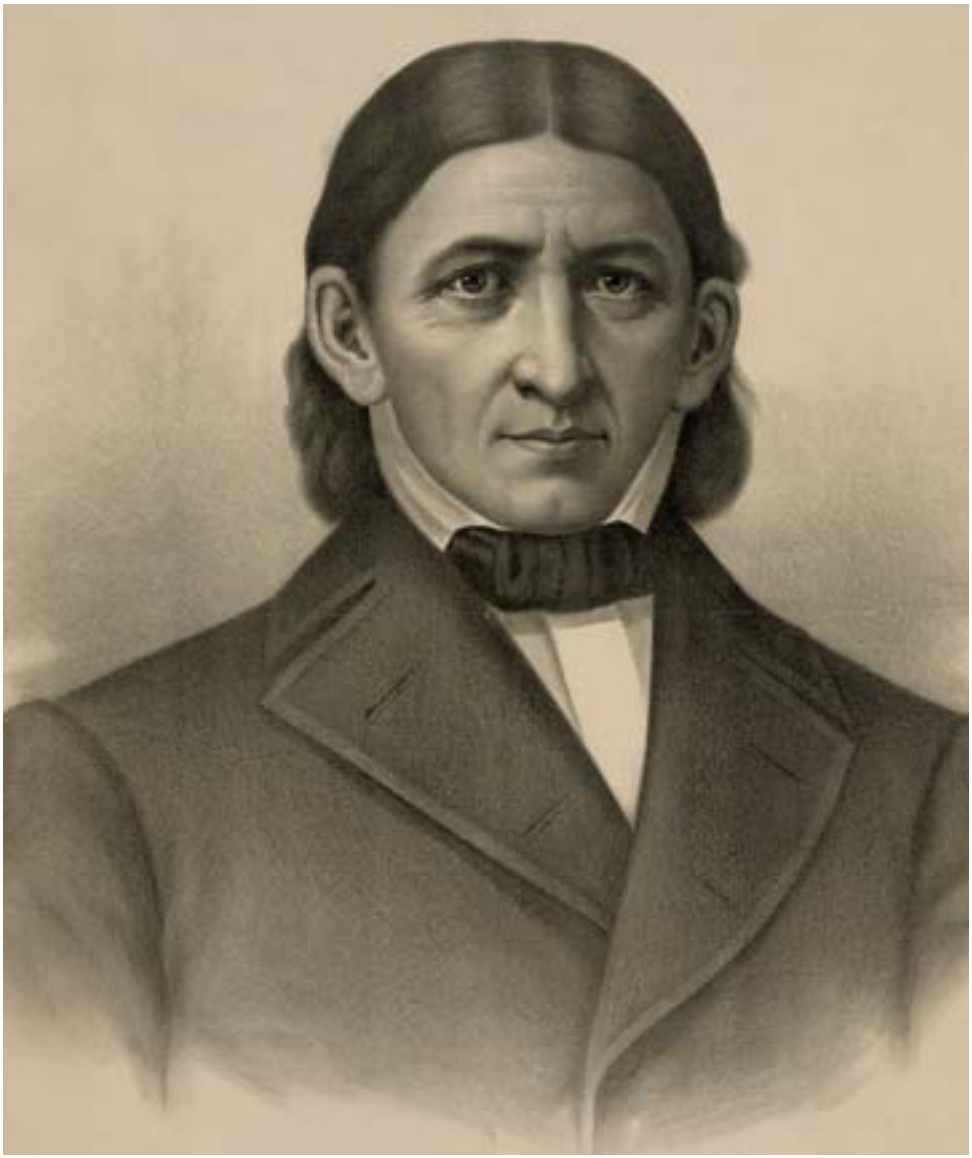
“In the short and long term, play benefits cognitive, social, emotional, and physical development...When play is fun and child-directed, children are motivated to engage in opportunities to learn,” the researcher concluded.

Even as your child gets older and starts school, play is important. It's still how your child learns and builds social, emotional and logical skills. Children at this age are more complex and are filled with lots of fantasy and drama.

One of the most successful education system in the world is Finland's. Finnish kids start pre-school at age 6, which is considered as late admission for some country. In fact, Finland is one of the most successful education system in the world. The secret of finland's successful education is nothing fancy. They value play as the most importance for kids. Finland's kindergartners spend a sizable chunk of each day playing, and not filling out worksheets.

The beginning of Play-based learning can be traced back to 18 century. Among the most well-known play-based learning philosophy, there are 3 interesing models inventors; the Froebel, the Montessori, and the Waldorf-Steiner Method.

There are many similarities in the approaches as they all strive to educate the "whole child" and believe that children should be responsible for their own learning to various degrees. There are also several differences in the philosophies and environments of the four different methods.



13

Froebel's Gift
Educational toy

14

FRIEDRICH WILHELM FROEBEL

Date back to 1837 in Germany, Friedrich Wilhelm Froebel established the very first educational foundation for the very youngs, so called Kindergarten. Froebel's views on education centered on the importance of play, games, and toys in the intellectual, spiritual, and social development of children, as inspired partly by his study of Comenius. Play was teacher-guided, who facilitated sensory and spiritual development by providing special materials, known as 'gifts.' These gifts included balls of yarn, wooden blocks and tablets, geometric shapes, and natural objects.

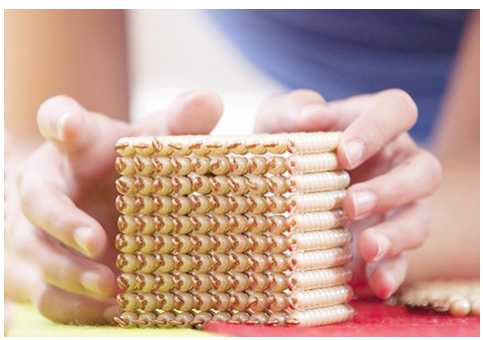
15

MARIA MONTESSORI

Maria Montessori elaborated on play based learning theory. She proposed that children would be better off if they spent their play learning, or imagining, useful things. In early childhood, Montessori students learn through sensory-motor activities, working with materials that develop their cognitive powers through direct experience: seeing, hearing, tasting, smelling, touching, and movement. In the elementary years, the child continues to organize his thinking through work with the Montessori learning materials and an interdisciplinary curriculum as he passes from the concrete to the abstract. He begins the application of his knowledge to real-world experiences.

Montessori Sensorial Material

16



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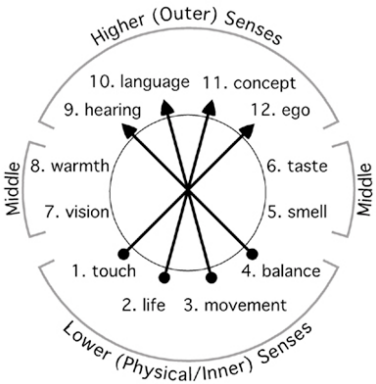
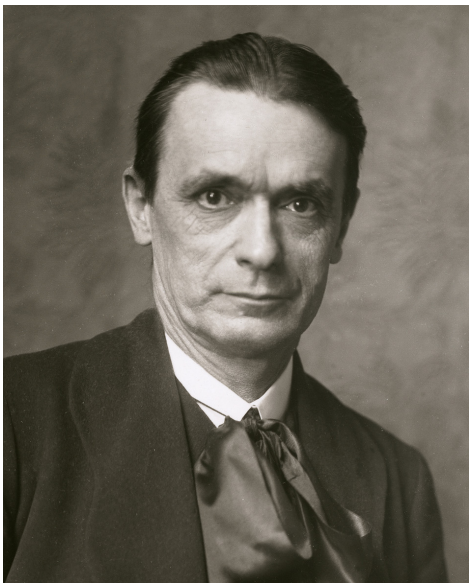


18 Waldorf Steiner 12 senses model



19

WALDORF STEINER

The Waldorf Steiner method was modeled strongly on the work of the Jean Piaget, who believed that young children learn best through play. Children need to learn through all senses: All lessons are designed to appeal to the “head, hands and heart” meaning that it is important to educate the whole child. Steiner believed that people actually have twelve senses, the traditional five plus thought, language, balance, movement, warmth, life and individuality. Waldorf-Steiner approach believes that a lifelong love for learning can be achieved through the arts: This serves to create a sense of wonder about different subjects and imagination.

QUICK LOOK THROUGH EACH MODEL

One key features of each educational model are overlaping together; **sensory integration learning**. The 5 senses that we use to perceive the world. There must be a reason why these children education inventors included sensory integration as the keys feature of the models.

SENSORIAL INTEGRATION

All of the information we receive about the world comes to us through our sensory systems. Because many sensory processes take place within the nervous system at an unconscious level, we are not usually aware of them. Although we are all familiar with the senses involved in taste, smell, sight, and sound, most of us do not realize that our nervous systems also sense touch, movement, force of gravity, and body position.

Just as the eyes detect visual information and relay it on to the brain for interpretation, all sensory systems have receptors that pick up information to be perceived by the brain. Cells within the skin send information about light, touch, pain, temperature, and pressure. Components of muscles, joints, and tendons provide an awareness of body position.

WHY IS SENSORY PROCESSING IMPORTANT?

Sensory processing starts developing since the first day we were born. A new born is able to see, hear, and sense their body, but it is unable to organize these senses. As the child is exposed to various sensory inputs, they gradually learn to organise them within their brain and are able to give meaning to them. The movement and perception will be refined by experience and growth. By organising sensations the child is able to structure their responses and, as a result, they seem to be more connected to the world and to be in control of their emotions.

When children are efficient in their processing, appropriate responses to the environment around us occurs and is demonstrated by appropriate skills, behaviours, attention, and self regulation. Children are able to sit and attend to the important pieces of information in a classroom and therefore will have a good chance at achieving their academic potential. Furthermore, children will be able to understand their body movements in relation to their surroundings(motor processing). This in turn aids the social development of children.

SENSORY INTEGRATION

Tactile
(touch)

where information is primarily taken in through the skin and includes temperature, pressure, vibration and pain.

Olfactory
(smell)

where information is taken in through the nose, such as scent.

Gustatory
(taste)

where information is taken in through the tongue in the form of flavor

Vision
(see)

where information is taken in through the eyes in the form of light, colour, shapeand depth. Visual processing skills are important for learning to read, write, and calculate.

The Far external senses : 5 sensory

Auditory
(hearing)

where information is taken in through the ears in the form of sound waves

Proprioception

An awareness of your body and whereit is in space. So where different parts of your body are in relation to each other and to the objects and people around you. Proprioceptive information comes through muscles, tendons and joints.

Vestibular

Movements, balance and information comes to us through our inner ear. This tells us about how we move, balance and about gravity.

Two less commonly known senses Information for these sensors comes from within our bodies:

The near internal senses

SENSORY PROCESSING DISORDER

One study (Ahn, Miller, Milberger, McIntosh, 2004) shows that at least 1 in 20 children's daily life is affected by Sensory Processing Disorder. Another research study by the SPD Scientific Work Group (Ben-Sasson, Carter, Briggs-Gowen, 2009) suggests that 1 in every 6 children experiences sensory symptoms that may be significant enough to affect aspects of everyday life functions. for children and adults with SPD, these difficulties are chronic, and they disrupt everyday life.

What Sensory Processing Disorder looks like

Preliminary research suggests that SPD is often inherited. If so, the causes of SPD are coded into the child's genetic material. Sensory Processing Disorder can affect people in only one sense or in multiple senses. A person with SPD may demonstrate over-reaction and under-reaction to sensation. Over-reaction is when a person finds to food texture, light, or sound are unbearable. Another under-reaction show little or no reaction to stimulation, even pain or extreme hot and cold.

A person with SPD may demonstrate over-reaction and under-reaction to sensation.

Children with Sensory Processing Disorder who have problems with motor skills and other abilities often become socially isolated and suffer from low self-esteem and other social/emotional issues. These difficulties put children with SPD at high risk for many emotional, social, and educational problems, including the inability to make friends or be a part of a group, poor self-concept, academic failure, and being labeled clumsy, uncooperative, belligerent, disruptive, or "out of control." Anxiety, depression, aggression, or other behavior problems can follow. Parents may be blamed for their children's behavior by people who are unaware of the child's "hidden handicap."

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With or without SPD symptom, every kids should beparticipated in sensory activities at home and school.

Effective treatment for Sensory Processing Disorder is available, but far too many children with sensory symptoms are misdiagnosed or not properly treated. Abundant amount of information on sensory activities can found on the internet. With or without SPD symptoms, every kids should participate in sensory activities at home and school.

SENSORY PLAY ACTIVITIES

tactile play activity

The play include the entire network of skin, including inside of the mouth. The key factor of the play is to practice hand skill, to feel through skin, to realize the hand weight pressure and to be creative. The suggested activities include art creation with hand skill, such as, finger paint, modeling clay, glue glitter, etc, Or, touching different materila, such as fabric texture play and roll in shaving foam. Cooking activities - mixing and stirring cookie dough, pushing cookie dough into cooking cutters. Measuring and pouring ingredients. Make pudding and jello, sift flour with hands.

20

Visual play activities

Visual processing skills are important for learning to read, write, and calculate. Kids can play indor activities, such as dot-to-dot fun pages that teach hand-eye coordination and ability to see the big picture. photo hunt, memories game, pattern making with ogjects, or writing shape.In kitchen, kids can measure ingredient and guess how many is inside. For outdoor activities, all kind of physical sports that use hand-eye coordination, such as catching balls, bowling, baseball, etc

21

22

Olfactory Play Activities

The Olfactory system is perception of scent that could inform if the smell is good or bad. Children can practice by smelling different scents and describe them.

23

Gustatory Play activities
The Gustatory System or sense of taste allows us to perceive different flavors from substances like food, drinks, me

The play might include the experimenting with temperature by using ice cube or frozen fruits. Experiment with texture or sucking and blowing activities

24

Auditory play sensory
The sense of hearing including loudness, distance and direction. It is also in the sense of balance and body position. The activities can be litening to sound with eyes close and identify the sound. Food sound play is an easy guessing game of what food is being cut or eaten.

25

Vestibular play activities
Oudoor playspace can provide avariety of vestibular movement opportunities for all children, for example, swings, see-saws, spinning wheels, gliders, and slides.

26

Proprioceptive play activities
The play can be in small scale such as, squeezing and rolling play dough to big scale of activities such as, climbing rockwall, jumping on a trambolin, pushing or pulling a heavy wagon and playing tug war.

27

INTEGRATED SOLUTION

According to the research, play-based learning is also an important factor for kids' learning process. Kids learn best through play and hand on exploration.

cooking food that requires heat and knife might not be an ideal method for the research target group

The relation between food and children yeilds several positive learning benefit. Food could be one of the best materials that ignite children's sensory, but cooking food that requires heat and knife might not be an ideal method for the research target group (age 5-10). However, baking is a version of cooking that is safe and fun. Seeing that, mixing powder, measuring butter, and shaping dough engage visual sensory and tactile sensory. Scent extract and food colouring trigger olfactory (smell) sensory and gustatory (taste) sensory.

The soltion must be carried out under "no food wasted" policy. As the result, the best solution is the baking preparation kit for kids, that kids can practice their sensory integration and learn how to bake.

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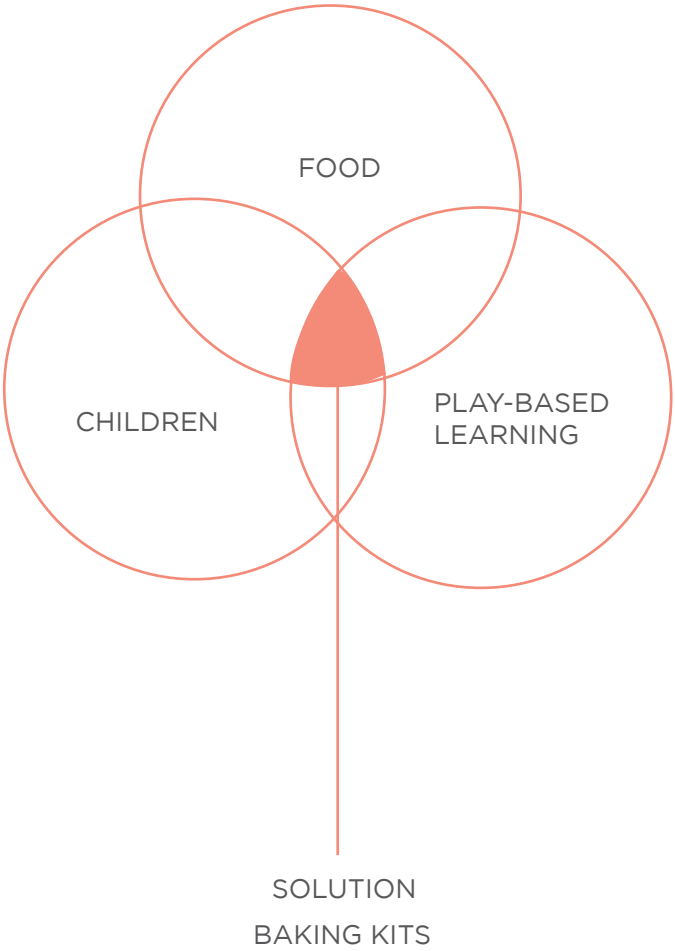

FOOD
CHILDREN
PLAY-BASED
LEARNING
SOLUTION
BAKING KITS

03.CONCEPT

THE INITIAL CONCEPT

"Baking kit that improve children sensory integration"

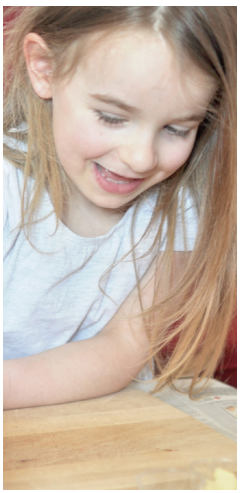
The main objective is to present food as the educational toy set for fostering children's learning;one of the most crucial part is not to waste the food.

The designed solution of the research is the baking set that stimulates children's sensory integration and curiosity. According to the research, food could be one of the best materials that ignite children's sensory, but cooking methods that require heat and knife might not be ideal children. Therefore, baking is a version of cooking that is safe and fun. Mixing powder, measuring butter, and shaping dough engage visual sensory and tactile sensory. Scent extract and food colouring trigger olfactory (smell) sensory and gustatory (taste) sensory.

A child can play with baking set alone or with friends and family members. However, when a kid plays with older companions, they could learn more through advices and establishing teamwork.

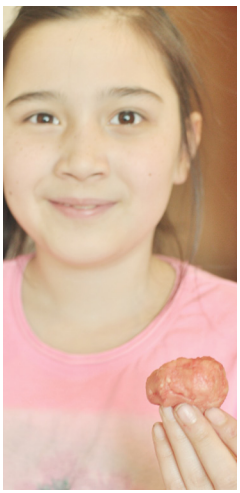
CONCEPT TESTING

TESTING SAMPLES



Luciene (age 6)

Lena (age 11)



Elien (age 9)

Sven (age 13)

TESTING OBJECTIVE

- To observe ability and how children use 5 senses in baking
- To observe if children can follow instruction
- To observe if children enjoy the process

PROCESS

All the ingredients are prepared for smallportion. Each ingredient is placed in a small bowl without label, and mostly in white color and dust form. The scent extracts were covered to hide the label.

First phrase: identifying ingredients and scents

- Everyone was asked to identify sugar, salt, and flour.
- Everyone was asked to identify scent extracts

Second phrase: making the dough

- Everyone was told to follow the instructions step by step.
- Once they start to knead the dough, they can freely add any ingredients they would love to

RESULT

Luciene and Lena

In the first phrase, Luciene (the youngest) had little experience in baking. Still, she could identify some ingredients by guessing from their appearances, with a little confusion. After she was told that she could taste, touch, and smell them, she did those actions toall the ingredients.

In the second phrase, Luciene could follow the instructionsvery well, but with Lena's help explaining them to her

They communitcated during the process. Luciene and Lena really enjoyed making cookie dough. They liked to have colorful cookies. However, kneading colours into the dough took a long time and required some technique. Luciene gave up before the dough was completely blue. At the end, baked cookies looked strange and funny. They seemed to be very proud of the result.

04.DESIGN


MAKE MANY COLOUR
AS YOU WANT
SCIENCE
LET'S COUNT INGREDIENTS


ARTS
..welcome to..
COOKIES
handmade education
MATHAMETIC

BRAND IDENTITY

NAME : COOKIES
SLOGAN : HANDMADE EDUCATION

The combination of name and slogan makes the complete character of the baking set. Cookies is only one product line from the inventor. If brownie kit was produced in the future, Brownie would be another name of another product line.

The name is direct and simple as it sounds, because consumers can easily relate this product with bakery. And, they can guess what they can they expect.

The role of slogan is to enphasize the function of the kit. “Hand on” intends to convey that the kits promote hand work process. Moreover, Education kit would imply that this kit is related to educational practice.

Brand character (as a person)
Cookies is a young cool teenager who love to play. He has interest in design

LOGO TYPE

As the product is for kids, but the design must be appealing to parents. The logo is the combination of digital typo font and graphic. Criterai of fonts selections is concerning friendly character, fun and not to childish. Gotham-round has the friendly appealing because of it round san serif edge. The master logo is the official logo that will be use in distribution media for promoting cookies set. The variation logos will be used when specifically mentioning to each set. Thus, the different graphic in each logo will represent different function of each bakery set.

MASTER LOGO

COOKIES

hand on yummy education

VARIATION LOGO

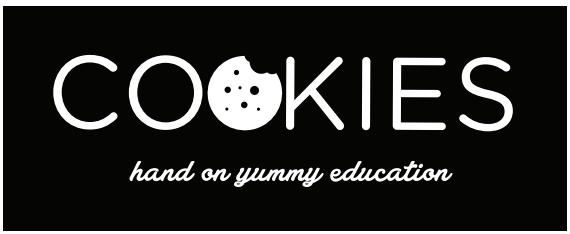
C☀OKIES

C▭OKIES

C●OKIES

USAGE

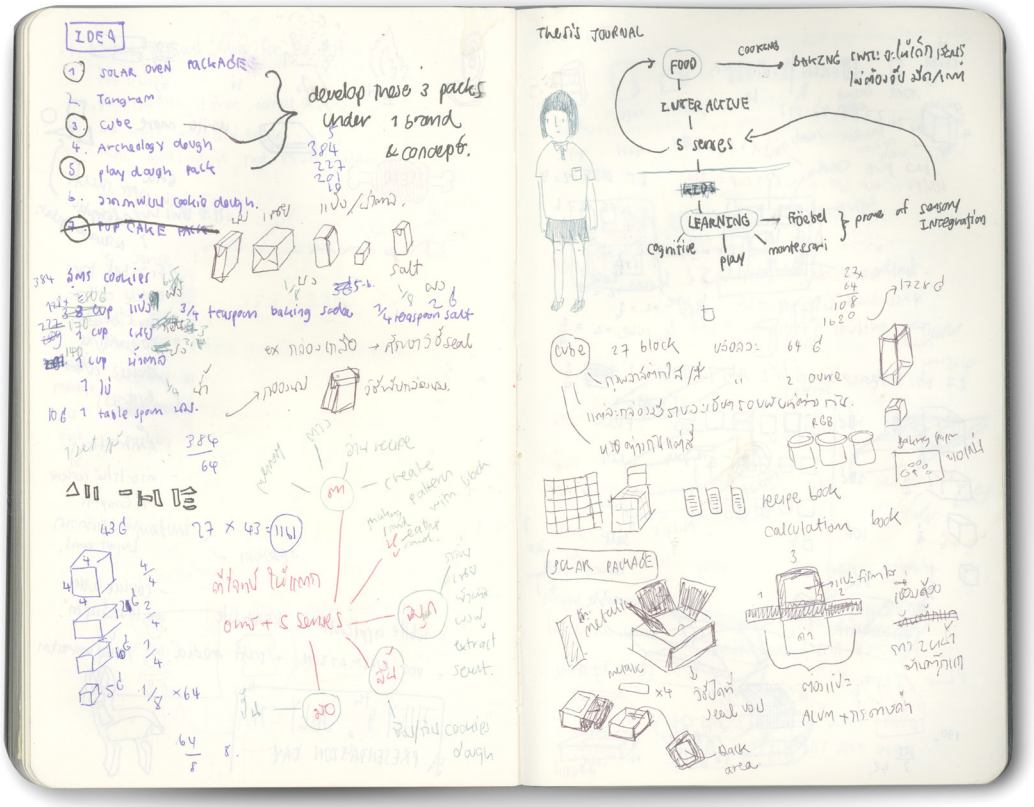

COOKIES
hand on yummy education


COOKIES
hand on yummy education

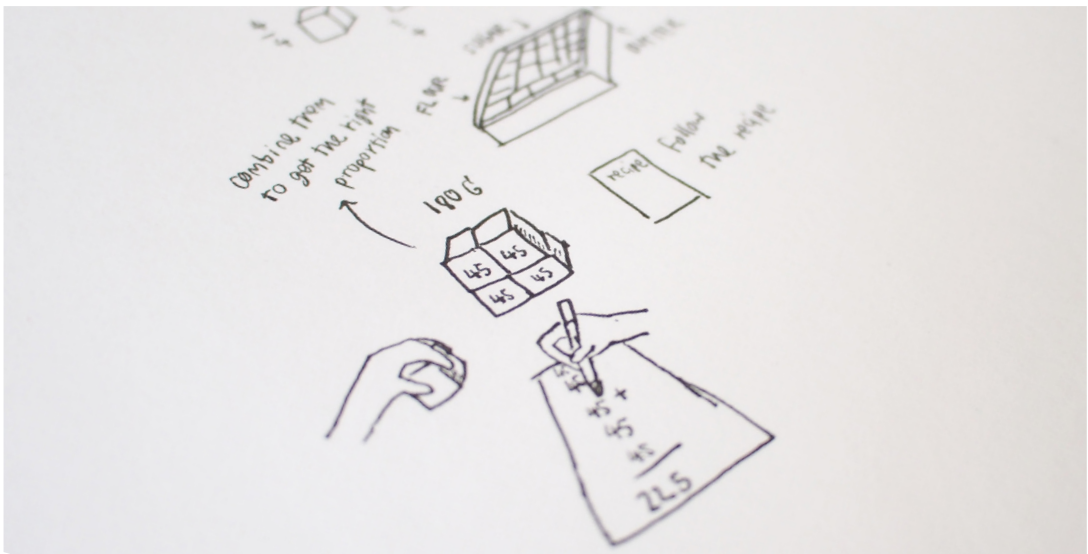

COOKIES
hand on yummy education
Clear zone

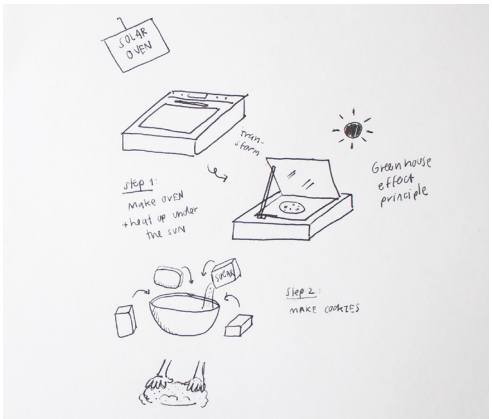
LOGO COLOUR

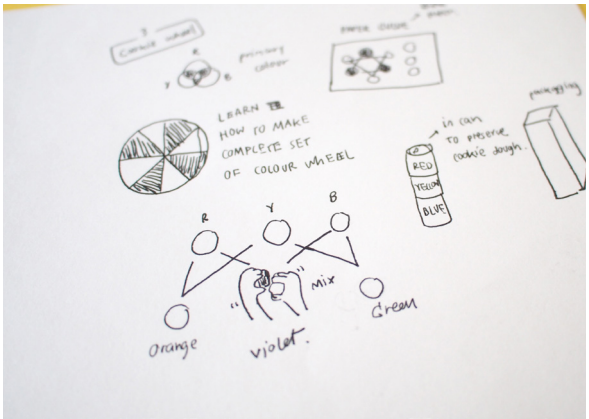
The master logo use brown as primary colour, representing colour of the cookies. For master logo, it must appear mostly in all media channel. Using three shades of brown colour will aid usage, when the logo is on the colourful layout. Variation logos are used in specific area. The graphics that replace o-letters are the same colour as graphic on each product package.



Sketch of final products

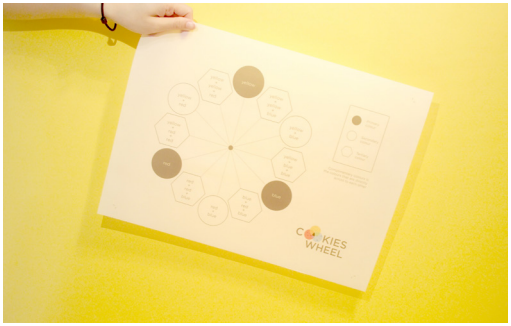


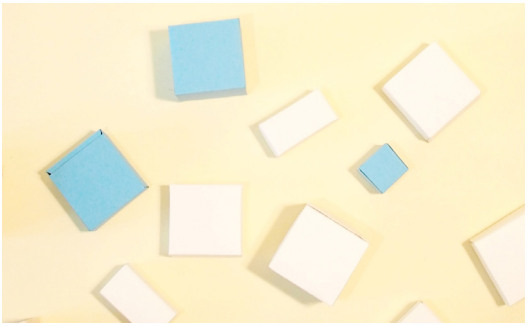




Sketch of final products


SUGAR


COOKIES
WHEEL



PRODUCTS DESIGN

PRODUCT DEVELOPMENTS





THE FIRST MOCKUP

Due to the first mockup design tend to overly portray the function of each baking set, It fail to deliver consistency in visual language either concept .

THE SECOND MOCKUP

Adapted from the first design, the graphic on the seconf mock up was changed. The logos were added. Graphic inside the instruction manual is also tuned to the same style. However, the problem is that the second design is not suitable for kids, due to lack of lively graphic elements and colours.

FINAL PRODUCT DESIGN


COOKIES
FREE BAKE PAPER INSIDE
YELLOW + BLUE
MAKE MANY COLOUR AS YOU WANT
HAND MUSCLE EXCERCISE
ARTS
COOKIES
handmade education
color
RED + BLUE
COOKIES
LET'S COUNT INGREDIENTS
HAND MUSCLE EXCERCISE
MATHAMETIC
COOKIES
handmade education
block

VISUAL LANGUAGE

Although, the products are meant for kids, but the target is also parents who are actual decision makers in buying. The ideal parents would be educated people, A to B+, and appriciate design works. Thus, the design should be appealing to both target groups; not too childish, nor too minimal.

To identify products as one family, graphic style of each package should maintain consistency. The style is simple 2D flat style with colourful mood and tone.

COLOUR

Colours are selected to match with kids style, yet not too colourful. All colours are toned down. Since the products are for bakery and eating, colours should be edible and sweet. There are three colours which are; blue, red, and yellow.

04.DESIGN


MAKE MANY COLOUR
AS YOU WANT
SCIENCE
LET'S COUNT INGREDIENTS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COOKIES
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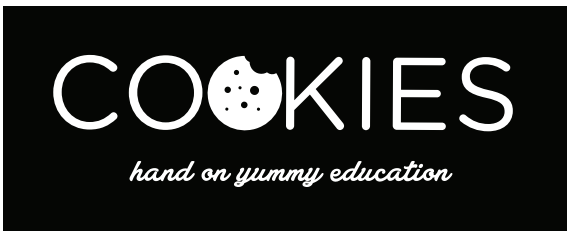
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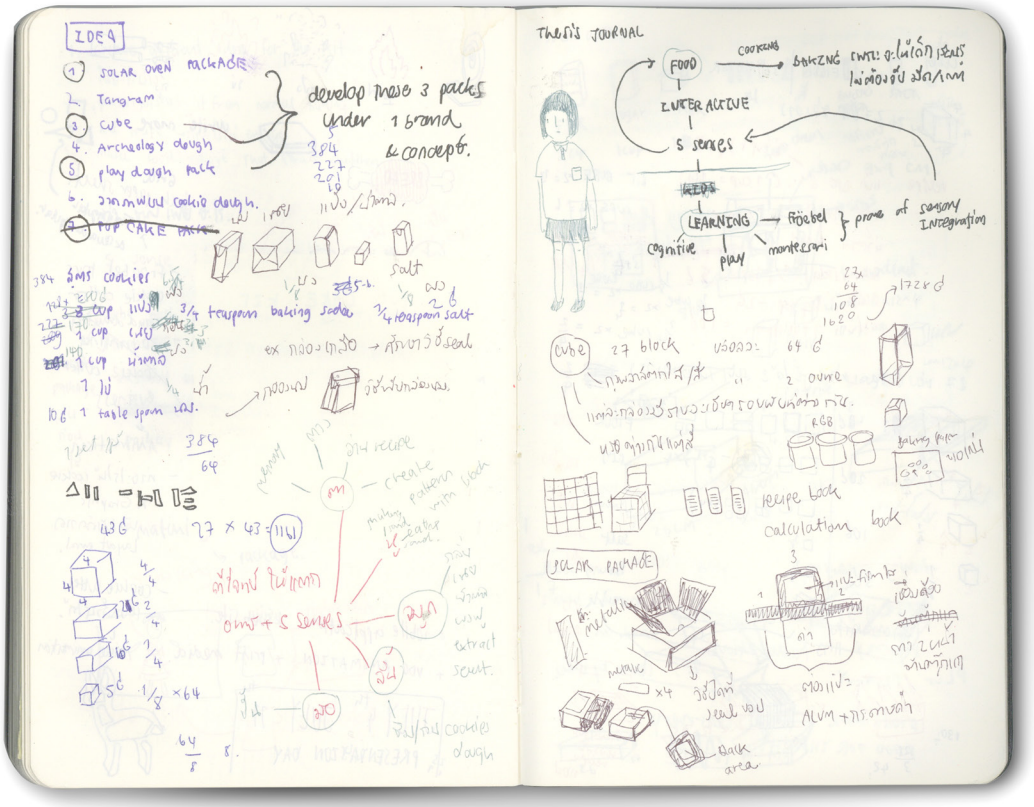

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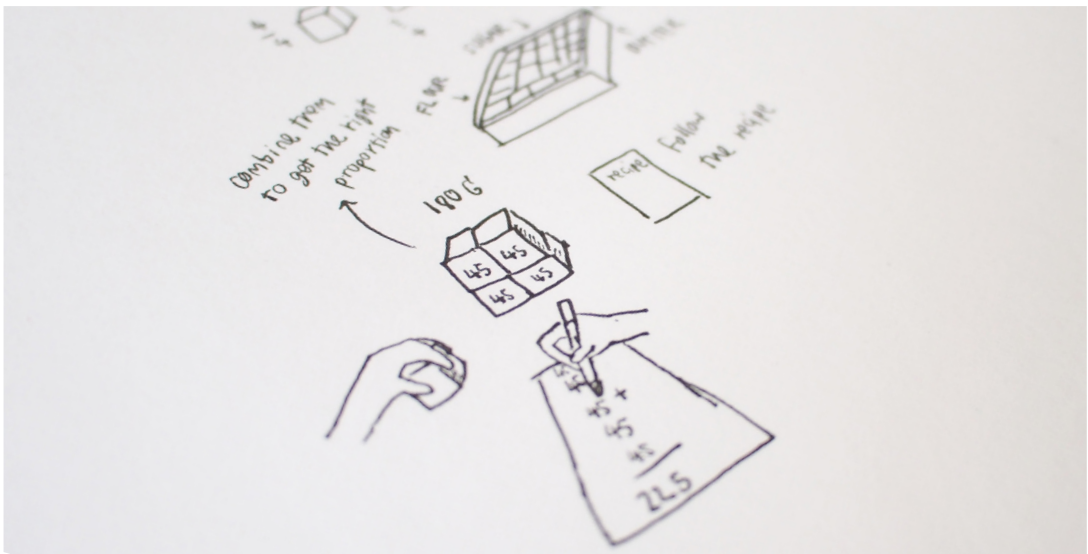

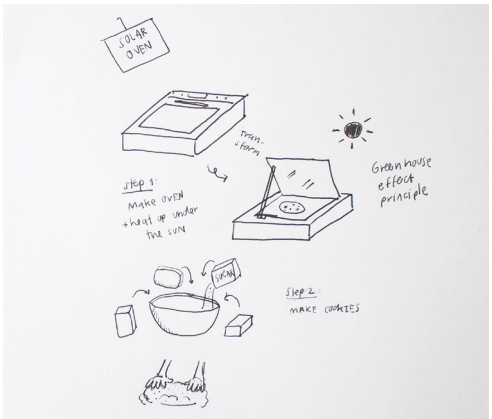

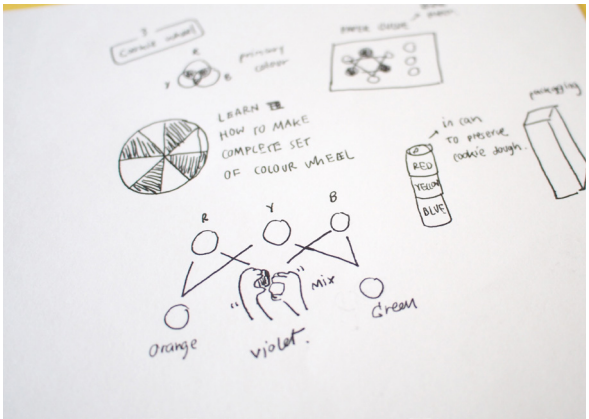

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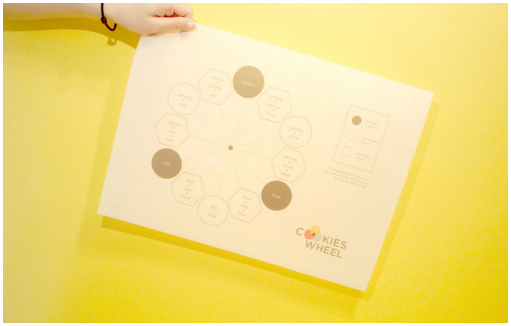
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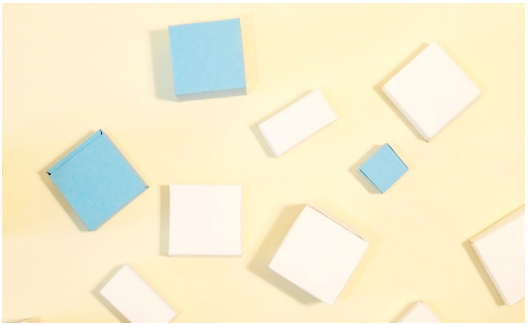

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VISUAL LANGUAGE

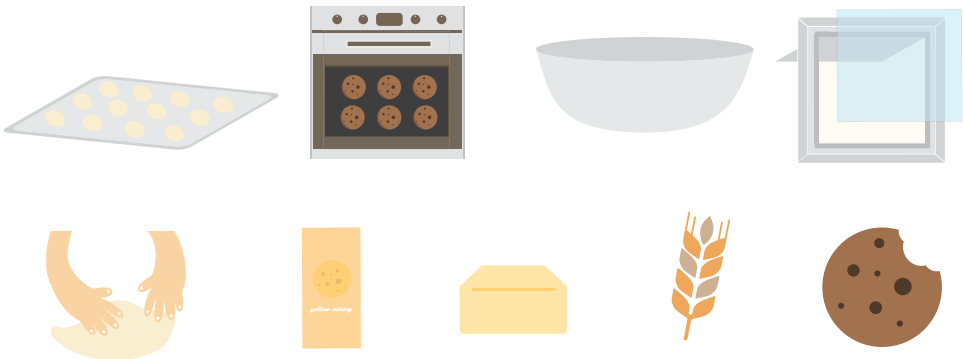
Although, the products are meant for kids, but the target is also parents who are actual decision makers in buying. The ideal parents would be educated people, A to B+, and appriciate design works. Thus, the design should be appealing to both target groups; not too childish, nor too minimal.

To identify products as one family, graphic style of each package should maintain consistency. The style is simple 2D flat style with colourful mood and tone.

COLOUR

Colours are selected to match with kids style, yet not too colourful. All colours are toned down. Since the products are for bakery and eating, colours should be edible and sweet. There are three colours which are; blue, red, and yellow.

VISUAL LANGUAGE

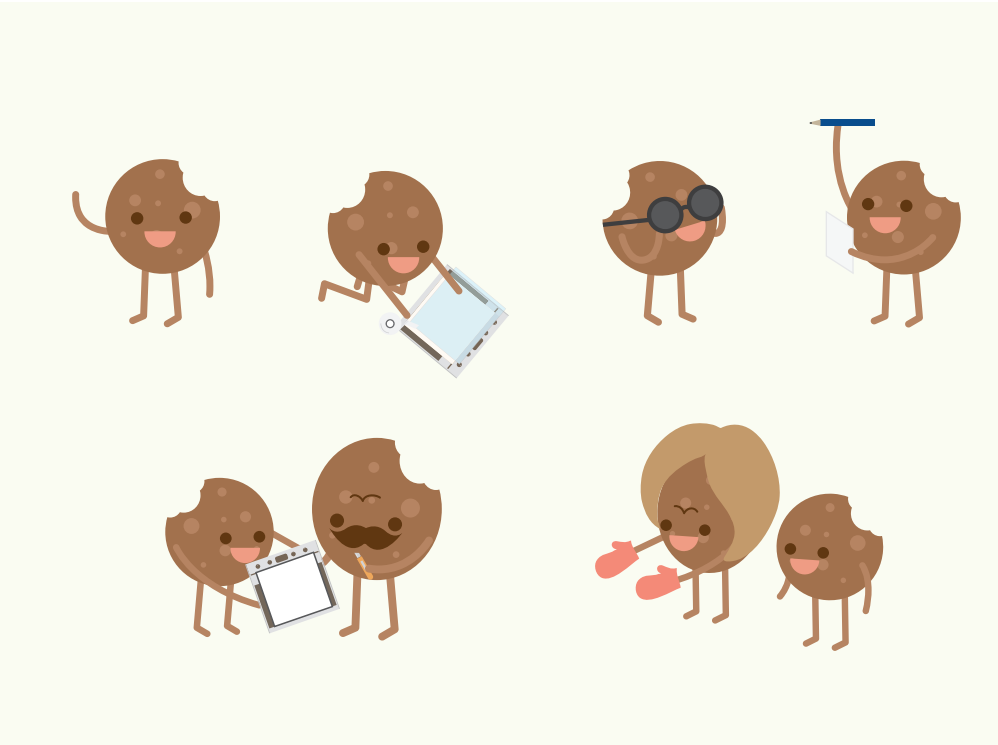


COLOURS

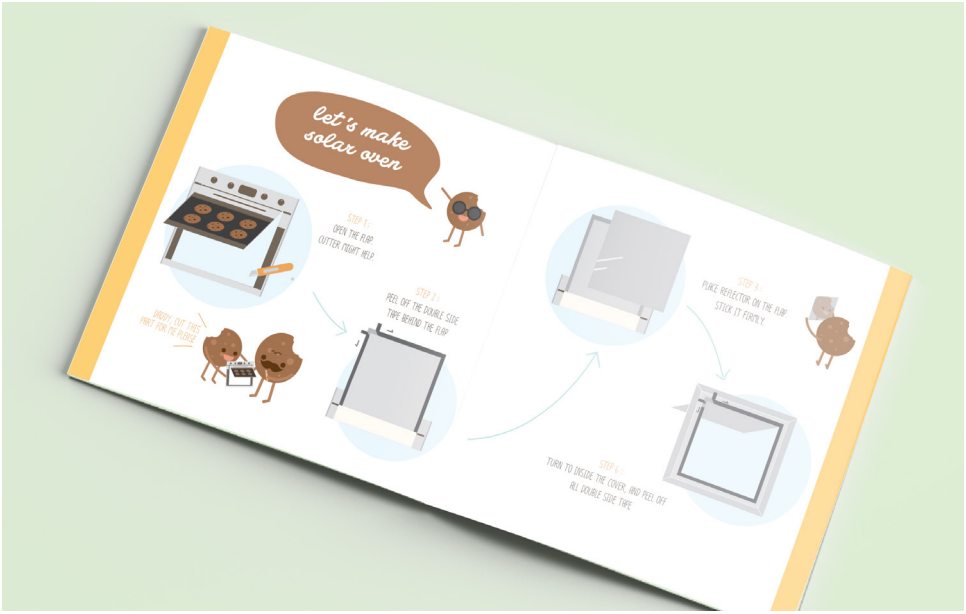
CHARACTER DESIGN

Cookie man is a fun and friendly cookie character. His role is to give tips and deliver playfulness in recipe section.

The shape derives from the master logo cookies. To keep visual language consistency, his appearance show simple, but cute design.




cookie dough
solar oven


let's make solar oven
STEP 1:
OPEN THE FLAP.
CUTTER, TAUGHT HELP.
STEP 2:
PEEL OFF THE DOUBLE SIDE TAPE BEHIND THE FLAP.
STEP 3:
PLACE REFLECTOR ON THE FLAP. STICK IT FIRMLY.
STEP 4:
TURN TO INSIDE THE COVER, AND PEEL OFF ALL DOUBLE SIDE TAPE.

PRODUCTS SPECIFICATION

01. COOKIES SOLAR

The package contains cookie ingredient and a solar envelop. Inside the envelop, you will find parts of solar oven and 2 book manuals; one for making cookies and another one for solar oven manual.

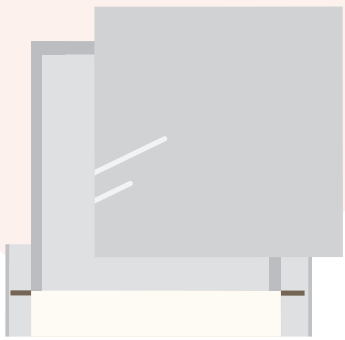

flour
milk
COOKIES
LET'S BAKE WITH THE SUN
SCIENCE
HAND PUZZLE EXERCISES
COOKIES
handmade education

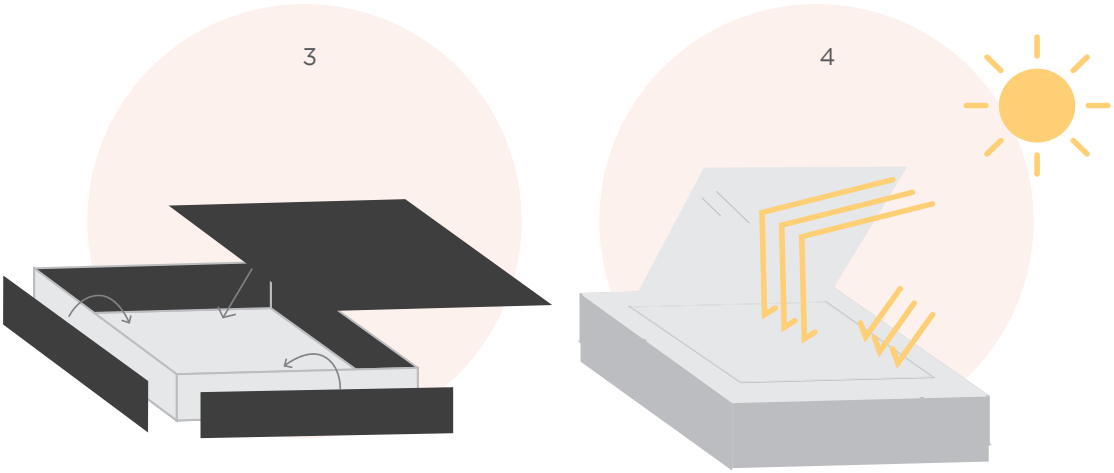
PLAYING WITH COOKIES SOLAR

Firstly, kids should make solar oven as the first step, so that they can heat up the oven under the sun while making cookie dough. The “solar oven” manual book visualizes how to turn a package to an solar oven step by step. The box also includes all materials for making solar oven.

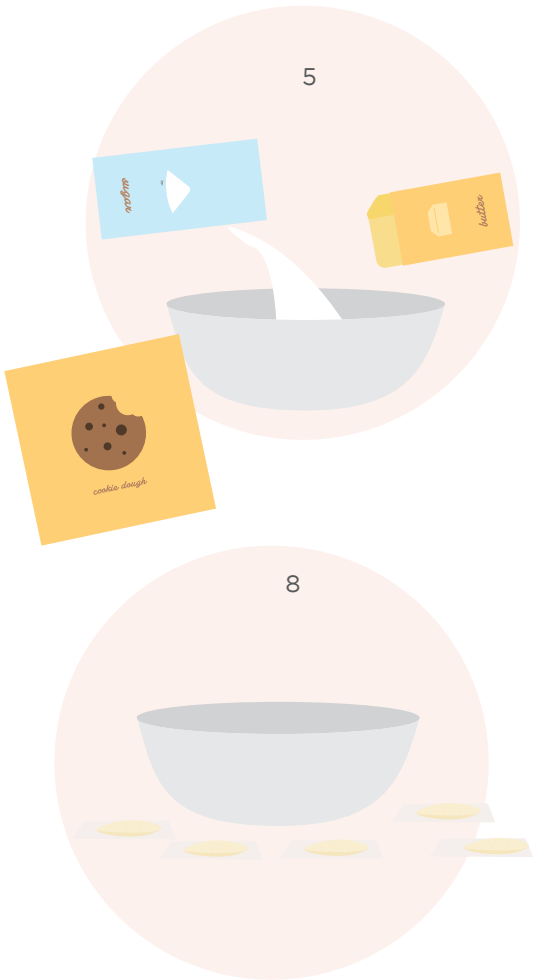
1

2




3
4

The second step is to make cookie dough. Likewise, kids can follow “Cookie dough” manual book. The crutial part of making cookies dough is using hands through out the process. While kids kneading cookie dough, they can practice their hand muscles and also using tactile senory.



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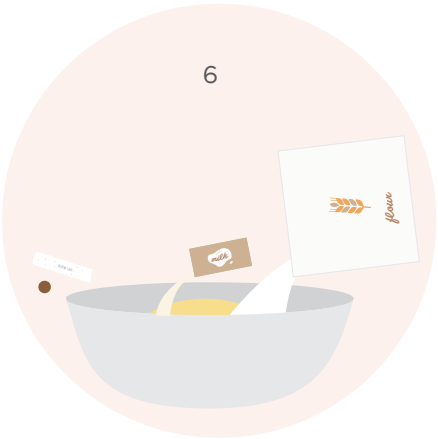

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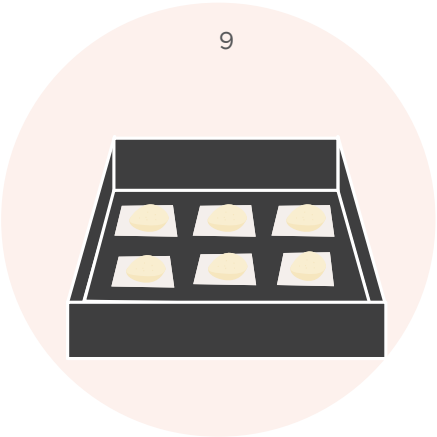

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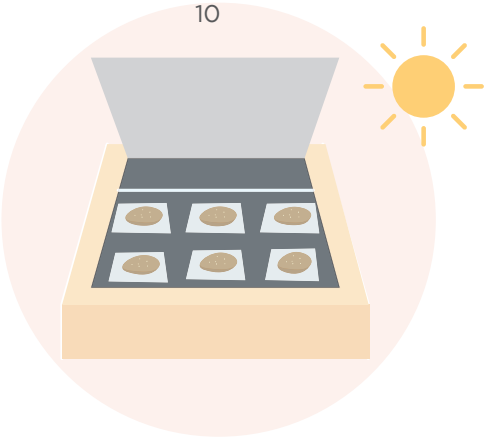
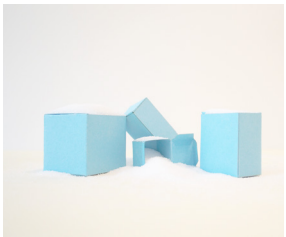
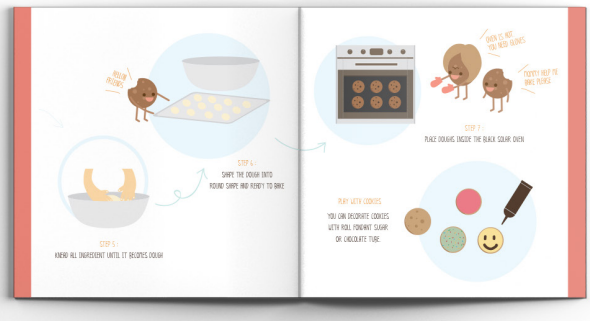


02. COOKIES BLOCK

Cookie block highlights mathematic apporach of baking. Cookie ingredients are packed in small regtangle and cube packages. Also, the manual book introduces all ingredients, capacity of each block, recipe. Besides making cookies, kids can play building blocks to practice their creativity.




cookie
building manual

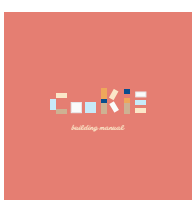

STEP 4 :
SHAPE THE DOUGH INTO
ROUND SHAPE AND READY TO BAKE
STEP 5 :
KNEAD ALL INGREDIENT UNTIL IT BECOMES DOUGH
STEP 7 :
PLACE DOUGHS INSIDE THE BLACK SQUARE OVEN
PLAY WITH COOKIES
YOU CAN DECORATE COOKIES
WITH ROLL FONDANT SUGAR
OR CHOCOLATE TUBE.

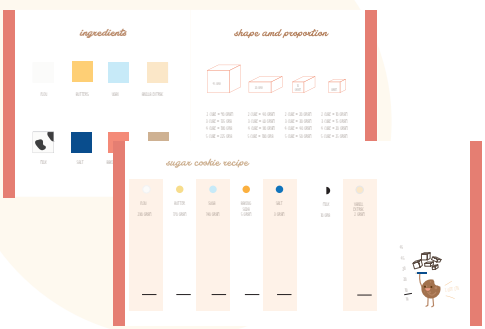

sugar cookie recipe
FLOUR
200 GRAM
BUTTER
170 GRAM
SUGAR
140 GRAM
BAKING SODA
5 GRAM
SALT
3 GRAM
MILK
10 GRAM
VANILLA EXTRACT
1 GRAM

PLAYING WITH COOKIES BLOCK

To sort out the ingredient, Cookies block manual book explains details of colour and proportion which kids can use as reference when gathering ingredients. On recipe page, the calculation column allows kids to make notes.

1





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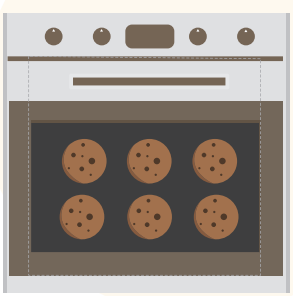
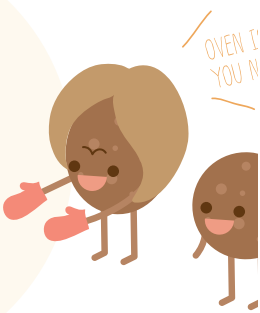


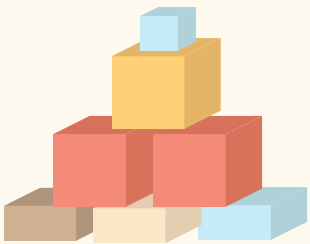


Once all the ingredients are collected, cookie dough must be made by hand. The manuak book also recommends kids to ask their parents for baking. Another special benefit of cookie block is that kids can practice their imagination playing with the blocks , when they are not baking.

2

3

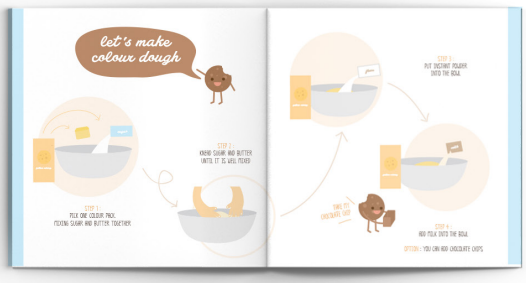
special play

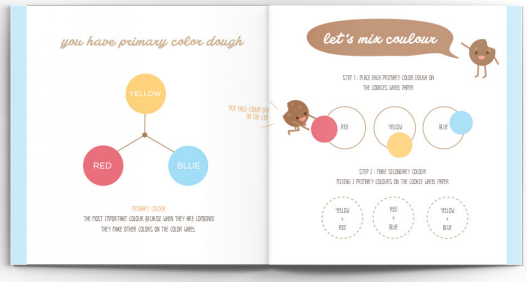


02. COOKIES WHEEL

Cookies wheel is composed of cookie ingredient which separated into three colours. Because the flour of each box contain food colouring powder, the dough will change colour when you knead them. Thus process of making each colour dough must be seperated

Secoundly, there is cookies wheel baking paper that guide children how to mix colour. And, they can bake the cookies with the paper.



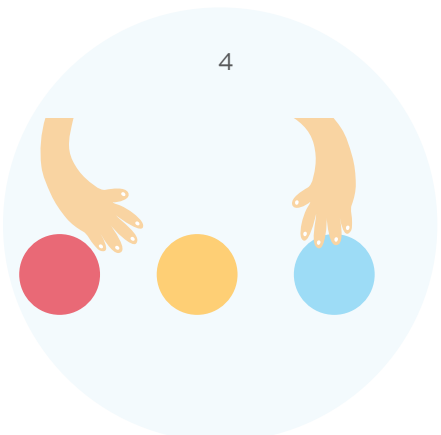



COOKIES
baking paper
COOKIES
handmade education
COOKIES
HAND MUSCLE EXCERCISE
MAKE MANY COLOUR AS YOU WANT
red mixing
red mixing
red mixing

PLAYING WITH COOKIES WHEEL

Cookies wheel package contain three boxes that make different cookie dough colours. Each box has the same ingredients, which are fermented flour mixed with food colouring powder, butter, sugar, and milk.

1

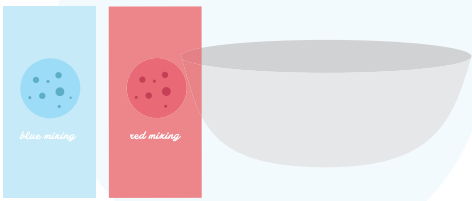


4

A roll of baking paper is included. The colour wheel guidance, so called cookies wheel, is printed on baking paper. By following the guidance, kids learn to make colour with three primary colours. Moreover, when kids finish with mixing cookie colour they can use this cookiee wheel paper to bake.

2

3



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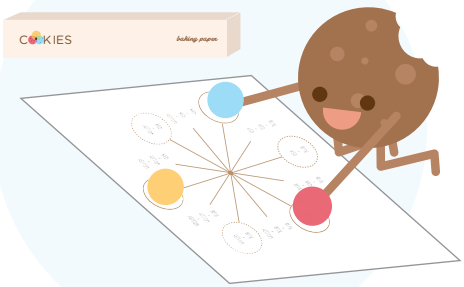
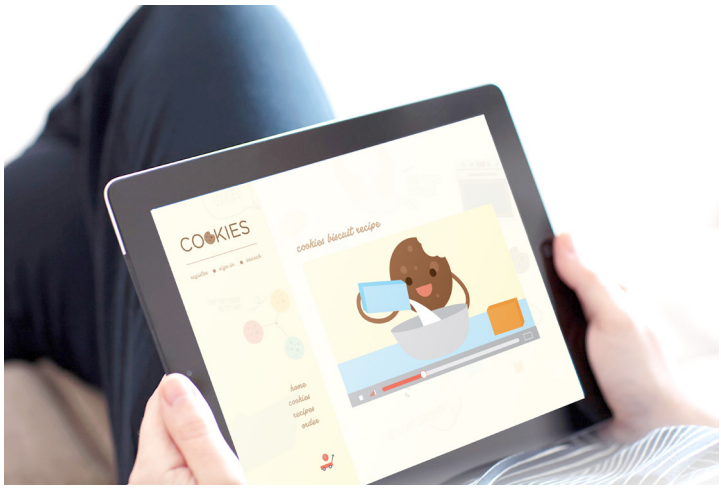


WEBSITE

Function of the website is to promote the brand and to serve as a distribution channel where customers can order products online. Consumer can find details and information about cookies in twebsite. The website will also present animated clips with step-by-step baking instructions and optional ingredients such that children can customize their own cookies. Subscribed customer will receive newsletter when the brand has updated news, product, or promotion. Further development includes customization section where customers can request for educational topics or skills they want to include in their baking kits. We will design it for them!!



ONLINE PLATFORM


let's make
COOKIES
handmade education


COOKIES
handmade education
kids learn best!!
when they play
three academic
bakery kits

BROCHURE

For promoting the brand and product.
the brochure will give a rough information about the product brand. It will encourage customer to check online website.

SHOPPING BAG

05.CONCLUSION

CONCLUSION

The research began with the simple question of “how can food be interactive?” The process of finding the right answers narrowed down the definition, criteria, objective and target group. The research objective is to transform food into playful children education tool. Moreover, food should not be wasted from the plays. Finally, the research produce a creative outcome of baking kit that foster children learning and can be eaten too.

The first topic is an interacting with food through its physical appearances. The second topic is children development. And the third topic is play-based learning. These 3 areas are somehow linked to the subject of sensorial integration. The subject is very important because children depend on senses to perceive and learn from their environment. The senses are touching, hearing, smelling, tasting, seeing, vestibular and proprioception. If one of these seven senses are not well developed, children might show symptom of SPD (sensory processing disorder) which will negatively affect their emotions, lives, and learning until they grow up. Thus, children are encouraged to participate in sensory integration activity since they start pre-school.

children depend on senses to perceive and learn from their environment.

Cooking is one of the suggested sensorial practices. However, cooking food that require heat and knife might not be ideal. Therefore, baking is selected because itis safe and fun. The initial concept is the educational toy set to help foster children learning. After testing of the concept with four kids in different ages, the result showed positive feedback toward the baking approach, but it also showed that each child has different interests and it is important to customize accordingly .

baking is selected because itis safe and fun. The initial concept is the educational toy set to help foster children learning.

With this reason, the baking sets are designed in different themes - science, arts, and mathematic, in playful methods. Baking kit might not be able to provide complete lessons to each topic, but it serves as the starting point to the next exploration.

POSSIBILITY

In the future, the baking kits can be developed in 3 areas: recipe, educational benefits, and packaging materials.

The baking kits have the potential for further development. The final outcome of every package is to make cookie dough because children can practice their hand muscle and can customize the baking recipe by themselves. Cookies is one of the easiest recipe that can also be adjusted for more advance levels. In the future, the baking kits can be developed in 3 areas: recipe, educational benefits, and packaging materials.

Initially cookies is the only product line offered. However, different kind of cookies recipe can be made in for the cookies product line. In the future, other product line can be launched such as Brownie, Cake, or Bread. Second, there are other fun learning method that we can further explore. These resources can definitely be integrated into the baking kits. Last but not least, the mock up of the product was made from purely paper just to show the functions of the idea. I believe that the packaging can be more economical in term of material selection and cost saving. Also, package of each ingredient can be designed with better usage functions.

The challenges foreseen for this project is the difficulty in promoting the novel idea and practice to parents since they will be paying for the kits. Many parents might stand their ground of not letting their children play with food. Thus, promoting and educating parents through various media will have to be considered..

There are many possible developments for this project. I hope that my work will contribute to the evolution of food interaction and also deliver the anticipated benefits to children; encouraging playful learning through senses and curious minds to children in various cultures.

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DECLARATION OF AUTOSHIP

Malinee Kulrakumpusiri

Student ID : 40 61 654

Herewith I assure sole autoship of my master thesis
Handmade Education : interactive food for children's learning.
I am responsible for the content of the paper and I have written the chapters solely with the resources and persons as quoted. I have not submitted this thesis to any other educational institution so far.

ACKNOWLEDGEMENT

I would like to thank Professor Bernd Hennig and Professor Carmen Luippold fo the advice and encouragement throughout this project, as well as friends for their helps and support.

SPECIAL THANKS:

Bell Sarunya
Darat Kennuntee
Sebastian
Maca Alomos
Phing Natchayar
Sandra Giegler
Li Qinyu