



**VISUAL ARTS LEARNING KIT DESIGN FOR BUILDING UP
RELATIONSHIP BETWEEN CHILDREN AND DIET**



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**VISUAL ARTS LEARNING KIT DESIGN FOR BUILDING UP RELATIONSHIP
BETWEEN CHILDREN AND DIET**

by

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Abstract

This study aims to improve the relationship between children and food by designing and producing a board game focusing on children's nutrition education. To explore how gamification can promote children's awareness and interest in healthy eating, thereby cultivating positive eating habits. Board games are centered around children, guiding them to understand the nutritional content, sources, and impact on their physical health of different foods through interesting game rules and interactive elements. The research results are that during the game, children will participate in activities such as food selection and nutrition knowledge quizzes, thereby enhancing their preference and awareness for healthy foods. In addition, board games also provide opportunities for parent-child interaction, where parents can participate in games with their children, discuss the importance of healthy eating together, and provide positive encouragement and support. Through this approach, the researcher hopes to promote the acceptance and practice of healthy eating at the psychological, cognitive, and behavioral levels of children, laying the foundation for building healthy eating habits. Future research can explore the long-term effects of board games on children's dietary behavior and health status, and combine other educational methods and intervention measures to comprehensively improve children's nutritional level and health literacy.

(Total 52 pages)

Keywords: Visual Arts, Learning Kit Design, Relationship, Children and Diet

Student's Signature Thesis Advisor's Signature

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Chapter 1

Introduction

1.1 Background and Significance of the Problem

In daily life, it is common to hear children complain about their unwillingness to eat vegetables, which is indeed a common phenomenon. According to the UNICEF's 2019 World Situation of Children, children who dislike vegetables can also cause physical problems, such as fever, constipation, dry mouth, malnutrition, and emotional instability.

Children Age 6-10 Are in a Critical Period of Physical and Mental Development, Especially the Formation of Eating Habits. With the Advancement of Technology and the Increasingly Prominent Environmental Issues, the Issue Between Children and Diet Is Also Constantly Evolving and Developing. For this situation, “Daniels notes that many obesity-related health conditions once thought applicable only to adults are now being seen in children and with increasing frequency.”

However, contemporary children have problems such as poor eating habits, uneven diet and nutrition, and the lack of food culture. In general, this phenomenon is mainly distributed in the following three aspects:

1.1.1 Poor Diet

Poor diet is widely found in children's daily life, and gradually cause no small harm to their growth. For example, According to the expert Daniels, S.R : 88% of children like to eat fried food, 30.91% of children like to eat candy and drinks, 75.44% enjoy snacks, 50.8% of children are distracted while eating, 42.8%Inability to eat autonomously.

1.1.2 Malnutrition

Due to the poor diet of children's lack of nutrition, the following sets of data were found in my survey 43% of children do not like to eat coarse grains, 36.36% of parents are unable to meet daily meat and vegetable requirements, 22.8% of children have slow growth and development, 49.9% Presence of partial eclipse.in addition, The proportion of obesity is constantly increasing (The data comes from a questionnaire survey designed by myself titled "The Relationship between Children and Diet in Contemporary Society", <https://www.wenjuan.com/s/UZBZJyfCA3/>). As can be seen from this set of data, some children's eating habits are very unhealthy, which also causes their malnutrition while growing up.

1.1.3 Lack of Food Culture

In my investigation and research, it is found that due to the limitations of time and resources, children often have a little hurry or delay time when eating, often unable to eat in the appropriate time and rhythm.Moreover, parents children's food education is also lack of appropriate and correct guidance and education, which is also a more significant problem. Most parents have an indulgent attitude towards children's food preferences, For example, when children are picky about food, parents do not do

timely correction, resulting in some children only eat a certain kind of food, such as the preference for fried food and meat, but the lack of nutritional intake of vegetables and fruits.



Figure 1.1 Apickychild

Source: Fashionable mom elements, 2019

In addition, because every child has his limitations, parents should timely guide children to have a richer understanding and interest in food, especially the nutritional value of different foods. On this basis, children can gain a more diversified understanding and cognition of food culture through games and other ways, and improve their interest in things. Therefore, through the above data, it is not difficult to find that the study of this problem is very important and valuable and meaningful.

Childhood is a critical period for children's dietary development, Dietary pairing during childhood is crucial, The growth of nutrition and obesity issues, To promote health and disease prevention (including mental illness, ADHD, etc.) The impact of improving social environment on children's diet.

In conclusion, Therefore, based on the above existing problems, the author hopes to gradually study and analyze the causes of this problem. In the contemporary society, through our design part to solve children's picky eating and anorexia habits, so that they can gradually love all kinds of food in the interactive games, and finally achieve balanced nutrition and healthy growth.

Poor Diet	Malnutrition	Lack of Food Culture
88% of children like to eat fried food	43% of children do not like to eat coarse grains	Time and resource limitations
30.91% of children like to eat candy and drinks	The proportion of obesity is constantly increasing	Lack of dietary education
75.44% enjoy snacks	22.8% of children have slow growth and development	Most parents have an indulgent attitude towards children's food preferences
50.8% of children are distracted while eating	36.36% of parents are unable to meet daily meat and vegetable requirements	Most children have limited understanding of food
42.8% Inability to eat autonomously	49.9% Presence of partial eclipse	Single cooking technique
		Not willing to try diverse food and culture

Figure 1.2 Questionnaire survey on the relationship between children and diet in contemporary society

Source: Researcher

1.2 Research Assumption

1.2.1 The reasons, types, frequency, and persistence of children's picky eating behavior in order to gain a deeper understanding of the characteristics and impacts of this behavior?

1.2.2 Investigate children's preferences and aversions to different foods to understand their motivations for choosing food?

1.2.3 Study how families influence children's dietary habits, including dietary education, family dining habits, and parents' dietary behaviors?

1.2.4 Explore how children's mental health and emotional state are related to dietary relationships, including anxiety, depression, self-image, and self-esteem?

1.2.5 Study social factors such as peer pressure, peer influence, and media influence, as well as how cultural factors such as cultural dietary traditions shape children's food relationships?

1.3 Research Objectives

This paper is committed to revealing the root causes of the problem through in-depth analysis of the causes of children's bad eating habits. To design an attractive set of food interactive learning games, in order to improve children's understanding of various kinds of food and nutrition, achieve the following specific goals:

1.3.1 Children awareness of the benefits and drawbacks of different foods to their physical health.

1.3.2 Children understand the relationship between their body and food, improve picky eating habits, and improve their quality of life.

1.4 Research Framework

The basic research idea of this thesis is to start with the relevant research problems, and use the analysis method of 5W1H ("5W" is a set of communication models first proposed by American political scientist Lasswell in 1932. After continuous application and summarization by people, a mature "5W+IH" model has gradually formed.) to gradually find problems, analyze problems and solve problems.

First of all, Researcher will analyze the specific reasons for children's bad eating habits from the physical and psychological factors. On the basis of analyzing the

reasons, it can be concluded that due to physical and psychological problems, children will have some specific ways of expression and bad behavior when eating.

Secondly, Researcher have analyzed the different and same aspects of children and parents' understanding and cognition of food by exchanging the perspectives and positions of food. In other words, what they are most interested in and enthusiastic about and what they care most about about food.

In addition, on the basis of the above two studies and analysis, the two aspects are combined, and then the physiological factors, physiological factors and educational factors are taken as my research scope to carry out specific research.

Finally, Researcher will build an interactive game set that focuses on children's diet. With the help of the adventurous and interesting story background and diversified game level design, children can understand the characteristics of various foods during the game, and help them overcome their prejudice against food, so as to help them grow up healthily.

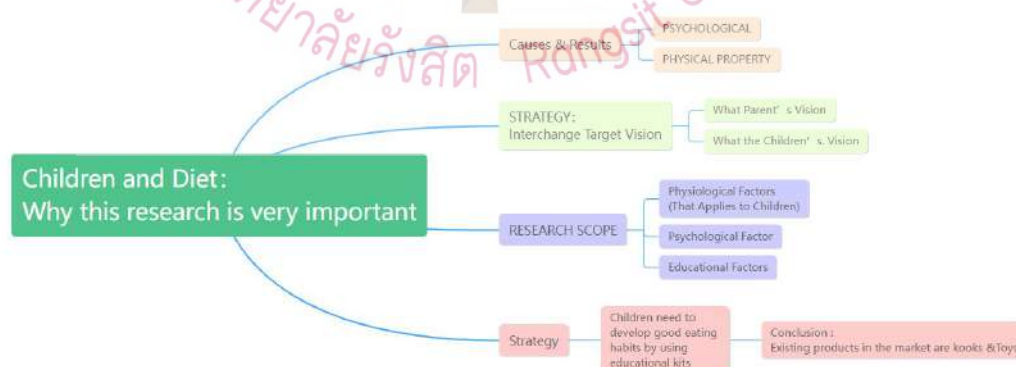


Figure 1.3 Paper framework mind map

Source: Researcher

1.5 Definition of Terms

Visual (adj.)

According to the Online Etymology Dictionary display: Early 15c., "pertaining to the faculty of sight;" also "coming from the eye or sight" (as a beam of light was thought to do), from Late Latin *visualis* "of sight," from Latin *visus* "a sight, a looking; power of sight; things seen, appearance," from *visus*, past participle of *videre* "to see" (see *vision*). Meaning "perceptible by sight" is from late 15c; sense of "relating to vision" is first attested c. 1600. The noun meaning "photographic film or other visual display" is first recorded 1944.

Design (v.)

According to the Online Etymology Dictionary display: Late 14c., "to make, shape," ultimately from Latin *designare* "mark out, point out; devise; choose, designate, appoint," from *de* "out" (see *de-*) + *signare* "to mark," from *signum* "identifying mark, sign" (see *sign* (n.)). The Italian verb *disegnare* in 16c. developed the senses "to contrive, plot, intend," and "to draw, paint, embroider, etc." French took both these senses from Italian, in different forms, and passed them on to English, which uses *design* in all senses. From 1540s as "to plan or outline, form a scheme;" from 1703 as "to contrive for a purpose." Transitive sense of "draw the outline or figure of," especially of a proposed work, is from 1630s; the meaning "plan and execute, fashion with artistic skill" is from 1660s. The intransitive sense of "do original work in a graphic or plastic art" is by 1854. Also used in 17c. English with the meaning now attached to *designate*. Related: *Designed*; *designing*.

Chapter 2

Literature Review

2.1 Overseas Research

In fact, foreign scholars have made many studies and discussions on the issues related to children's diet. Among them, the American scholar Daniels has conducted related studies on the consequences of overweight and obesity in children. Birch & Fisher have done related research on the development of eating behaviors in children and adolescents in 1998. In addition, in some official institutional studies, there are also relevant data statistics. For example, American Academy of Pediatrics and World Health Organization (WHO) and CDC have relevant statistics on sugar intake in adults and children. For the above issues, Hingle & O'Connor provide some interventions for parental participation to improve children's dietary intake in 2013. However, in the collected literature, there has been no specific design study from the perspective of interactive game design. The article mentioned above is attached to the following references.

2.2 Domestic Research

A search for children's bad eating habits on the CNKI found a total of 72 related research papers, including 64 academic journals, 4 master's degree theses and 2 newspapers. In summary, these research articles mainly focus on the following aspects: One is the harm caused by bad eating habits to children, including the master's thesis

of Zhiping Lin of Fujian Medical University A study of dietary behavior and it influencing factors and health effects in urban children. The second is to study the harm of bad eating habits in children in regional schools or communities.

For example, represented by Jianhua Wei on the harm of Bad Eating Habits on the Physical Development and Psychological Development of Preschool Children published in the journal Modern Diagnosis and Treatment. However, the design of the design field for children's poor dietary habits is also insufficient. The article mentioned above is attached to the following references.

2.3 (6-10 Year Old Children) Analysis of Unhealthy Dietary Behaviors

First of all, in this section, Researcher will specifically analyze the specific manifestations of children's bad eating habits, and when these habits and performance occur. Through these analysis, I will further conclude the specific causes of these problems.

2.3.1 Unhealthy dietary habits in children

On October 16, 2019, the UNICEF's China Office and the Chinese Nutrition Society jointly released the State of World Children 2019 report in Beijing, with the theme of "Children, Food and Nutrition: Growing healthily in a Changing World". Representatives from academia, NGOs and other United Nations agencies attended the conference. The report reveals that at least one third of children under five worldwide are undernourished or overweight, and half face hidden hunger. The report shows that the main cause of the triple burden of malnutrition is poor dietary quality in children, and two-thirds of children do not meet the minimum diversity criteria. Rapid

globalization, urbanization, increasing injustice, humanitarian crisis and climate change have further worsened this problem, and made the global nutrition situation face unprecedented negative effects, thus further threatening the survival and growth of children, as well as the development of various countries. According to the above reports, we found that children's poor eating habits mainly focus on the following aspects:

2.3.1.1 High sugar diet: Children consume excessive amounts of high sugar foods and beverages, such as candy, desserts, carbonated drinks, and fruit juices.

2.3.1.2 High fat diet: Children consume foods high in fat and cholesterol, such as fast food, fried food, potato chips, and high fat dairy products.

2.3.1.3 Low intake of fruits and vegetables: Children do not eat enough fruits and vegetables and lack vitamins, minerals, and fiber.

2.3.1.4 Unbalanced diet: Children may rely too much on processed foods and fast food, while neglecting the staple foods, protein, vegetables, and fruits in a balanced diet.

2.3.1.5 Eat less breakfast: skipping breakfast or eating unhealthy breakfast may affect children's attention, learning, and quality of life.

2.3.1.6 Large amount of snacks: Children may frequently consume high calorie, low nutritional value snacks.

2.3.1.7 Irregular diet: Irregular dietary schedules and irregular dietary patterns.

2.3.2 The period when poor dietary habits occur in children

Unhealthy eating habits can begin to develop in early childhood, and play a crucial role when parents or guardians choose food for their children. According to the findings of Birch, L. L, & Fisher, J.O, It may also worsen during adolescence as children become more autonomous and can choose their own food.

According to the above research status at home and abroad, it can be found that most of the research papers analyze the causes of children's bad eating habits from the medical perspective, and do not conduct research from a more designed perspective. So I will first analyze the three basic reasons for bad eating habits in children aged Six to ten.

2.3.3 Psychological Factor

In October 2021, UNICEF released a report on the State of Children in the World 2021, which is the first to examine the mental health of children and adolescents. In the context of increasing awareness of mental health issues, it advocates effective interventions in areas such as health, education and social protection, such as child rearing and school-wide programs to promote, relationship, and protect children's mental health.

First, from a psychological point of view, every child may have different degrees of preference and aversion to certain foods. If this phenomenon is serious enough to affect their health and nutritional intake, attention and interventions must be taken. Many children reject foods they don't like, which may appear early in their Childhood. Therefore, we must prioritize the age and characteristics of children when studying the influencing factors of poor eating behavior in children.



Figure 2.1 Global Children's Report 2023

Source: UNICEF, 2023

Among children aged 6 to 10, they do not have a complete sense of autonomy and are dominated by unintentional attention. In today's colorful living environment, we can find that many things can disturb, hinder and lure children's attention and preferences. Especially in the absence of full supervision and guidance of parents, children are often difficult to control their own eating behavior, easy to develop picky eating habits and difficult to correct. In the long run, this will lead to bad, conscious behavior. Once these behaviors and habits solidify, change will become quite difficult.

2.3.4 Physiological Factors

In the process of children's growth, the quality of eating habits directly affects their physical health and development. In addition to psychological factors, we also found that there are many causes of poor eating habits in children, including many objective physiological factors. Such as digestive system disorders and metabolic abnormalities. These physiological factors not only come from each child's unique upbringing environment, but also are closely related to their respective family conditions.

First of all, each child grows up in a different environment, which makes them show a variety of innate and acquired physical differences during childhood. These

differences affect their eating habits to some extent. For example, some children are born with certain genetic physiological defects, such as digestive disorders or metabolic abnormalities, which may have adverse effects on their eating habits. They may resist eating because of pain, discomfort or other symptoms, or be unable to digest and absorb nutrients from food.

In addition, family conditions also have an important impact on children's eating habits. Family economic status, parents' educational background and eating concepts will leave a mark in the formation of children's eating habits. Children with better family economic conditions tend to get richer and healthier food, and their eating habits are more likely to receive the attention and guidance of their parents. On the contrary, children with poor family economic conditions may face food shortage, malnutrition and other problems, and their eating habits are more vulnerable to adverse effects.

In short, to solve the problem of children's bad eating habits, we need to start from many aspects. In addition to paying attention to children's mental health, we should also pay attention to their physical needs and provide them with adequate and healthy food.

2.3.5 Educational Factors

In the process of shaping children's eating habits, the role of family education is pivotal, which, together with physical and psychological factors, affects children's eating choices. Therefore, parents should realize the importance of food education to help their children establish the correct concept of food.



Figure 2.2 A picky child

Source: Amy Parenting, 2018

First of all, parents should set an example in daily life, reasonable arrangement of children's meal time, to ensure that they eat regularly. Parents should respect their children's wishes and discuss their diet issues with them in order to more accurately meet their nutritional needs. At the same time, parents should educate their children to cherish food and cultivate good habits of not being picky and not wasting. This is not only conducive to children's health, but also helps to cultivate their moral concept and social responsibility.

Secondly, parents should pay attention to their children's mental health and create a harmonious family atmosphere. When children are faced with diet choices, parents should communicate with them with patience, understanding and caring attitude, and help them build up self-confidence and overcome problems such as picky eaters and partial food. At the same time, parents should also pay attention to the all-round development of their children, cultivate their qualities of independent thinking, good communication and brave responsibility, and lay a foundation for their better life in the future.

In addition, parents also need to communicate with their children regularly to understand their eating status and find and correct problems in time. This requires parents to have a keen observation and judgment, in order to provide timely help and support when their children are faced with dietary difficulties. At the same time, parents should encourage their children to participate in outdoor activities to enhance their physical fitness and immunity and ensure their health.

In short, parents in the process of cultivating children's good eating habits, should pay attention to the children's physical, psychological and all-round development, set an example, patiently guide, and discuss food problems with children. Scholars Birch, L.L., & Fisher, J.O noted: "Initial evidence indicates that imposition of stringent parental controls can potentiate preferences for high-fat, energy-dense foods, limit children's acceptance of a variety of foods, and disrupt children's regulation of energy intake by altering children's responsiveness to internal cues of hunger and satiety. " Through these methods, parents can effectively cultivate their children's good eating habits and provide a solid guarantee for their healthy growth. At the same time, parents should also pay attention to the all-round development of their children, cultivate their qualities of independent thinking, communication and responsibility, and lay a foundation for a better life in the future.

In modern society, the cultivation of children's eating habits is particularly important, because it is related to the healthy growth of children, and even the future of the country. Therefore, families, schools and society should work together to create a good eating environment for children, so that they can establish a correct eating concept and form a healthy lifestyle in the process of healthy growth. In this way, our next generation can meet the challenges of the future in a vibrant and healthy life.

2.4 Case Study

2.4.1 Case context

Jack is a lively and lovely five-year-old boy in a kindergarten in Gansu Province, China. He should grow up healthy, but his bad eating habits caused malnutrition, causing a series of health problems.

2.4.2 Case Description

Jack has been eating foods high in sugar, fat and salt, such as potato chips, candy and carbonated drinks, and rarely eats vegetables and fruits. He eats almost the same every day, drinking a cup of milk in the morning and eating a fried dough stick, eating a fried chicken set meal at lunch, and eating a bowl of instant noodles in the evening. Due to his busy parents, he has little time to care about Jack healthy diet.

As time went on, Jack began to develop symptoms of malnutrition. His height and weight are lower than the children of his age, often feeling tired and weak, reduced immunity, and prone to illness. His hair became dry and brittle, and his skin became dry and rough.

2.4.3 Case Analysis

Bad eating habits: Jack prefers foods high in sugar, fat and salt, and rarely eats vegetables and fruits, leading to nutritional imbalance. These foods lack nutrients such as vitamins, minerals and dietary fiber that the body needs, which can lead to malnutrition in the long run.

Although foods rich in sugar, fat, and salt can satisfy the taste buds, they provide many nutrients that are not sufficient to meet the daily needs of the body. Vitamins, minerals, and dietary fiber play a crucial role in maintaining human health. Vitamins can enhance immunity and help the body fight against diseases; Minerals are important components that make up bones and teeth, but they also participate in various physiological functions of the human body; Dietary fiber can promote intestinal motility, aid digestion and bowel movements. Jack has been ignoring these nutritious foods for a long time, which has led to his body gradually experiencing problems.

Lack of exercise: In addition to school, Jack spends most of his time sitting at home watching TV or playing computer games. Lack of necessary exercise reduces the body metabolic rate, which affects the absorption and utilization of nutrients.

As a result, Jack's physical and mental health has declined. His muscles are weak and the cardiovascular system is gradually damaged. Furthermore, regular sitting still may lead to an increased risk of lifestyle diseases such as obesity, diabetes and cardiovascular problems.

Poor eating environment: Jack's parents have little time to cook and accompany their children to have dinner, which makes Jack often buy unhealthy food outside to eat, exacerbating the problem of malnutrition.

In contemporary society, people's pace of life is gradually accelerating, so in order to live a more convenient life, fast food and convenient food have become the first choice of many families. However, these foods are often rich in high calories, fat and salt, and long-term consumption has a serious impact on your health. For children like Jack, the problem of malnutrition not only affects their growth and development,

but may also negatively affect their physical and mental health. In the long run, the overall decline of the physical quality of Chinese teenagers will become a problem that can not be ignored.



Chapter 3

Research Methodology

3.1 Materials and Technique Experiment

In the process of thesis, the core focus is on the production process of the product, and how to improve the product quality through cutting technology, painting, plate making, printing, binding and other skills. At the same time, Researcher will use wood, paper, paper shell, composite materials, paint, iPad and other materials to create a creative and educational value of food education sets. As scholars Jo Bird, Susan Edwards pointed out: "A significant problem for early childhood education has been how to understand the pedagogical use of technologies in a sector that values play-based learning."

First of all, in the construction of the game story line, we can write a vivid and interesting story for children, so that they can understand the advantages and nutritional value of various foods in the process of reading. The story can revolve around a theme, such as adventure, food chain, food growth process, food collocation, etc., so that children can better understand the importance of different foods.

Secondly, Because the iPad has a more powerful drawing function, so Researcher chose it as my main drawing tool. Researcher will use Procreate, a professional software, to paint on the iPad, including depiction, map design, and color matching. In

addition, Researcher can use cutting technology to make cards in the shape of various food, so that children can know and understand the food and its characteristics in the game. On these cards, we will briefly introduce the food name, characteristics, nutritional value and eating methods. The cards will be classified into vegetables, fruits, meat, grains, etc., for children to consult and learn.

In the production process, we can choose different materials of paper and cardboard shells to make game maps and cards and other related information. In short, in the specific design process, I will mainly use the above basic materials.

3.2 Character design

3.2.1 Game story summary

In a magical world, various people live with delicious food. But recently, an evil and biased witch came to this city, specifically taking away children who have a bias towards food and making people more picky about food. As a taste adventurer, the player's task is to dispel prejudice, unlock the magic of wizards, and help people rediscover their taste buds and fall in love with food.

3.2.2 Dominant role

Jack: The hero of the story is also a little boy who is picky and not of vegetables.

Emily: Jack's friend next door is a little girl who likes to eat vegetables and can help Jack.

Nancy: Jack's mother, Jack is a picky eater, but she can release key energy for Jack in the game.

Nomashi: The prejudice monster of terror is the appearance of an old witch.

big john: was locked up a big fat man image of the child, love to eat meat.

Little Henry: a small thin child, do not love to eat vegetables, do not love to eat meat anorexia children.



Figure 3.1 Main character design

Source: Researcher

3.3 Design process

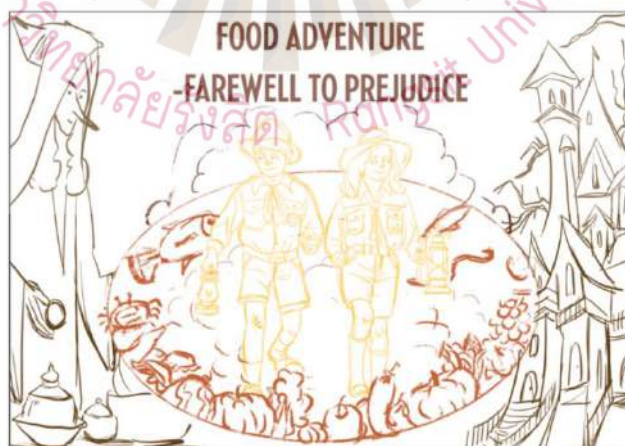


Figure 3.2 Game outer packaging design

Source: Researcher

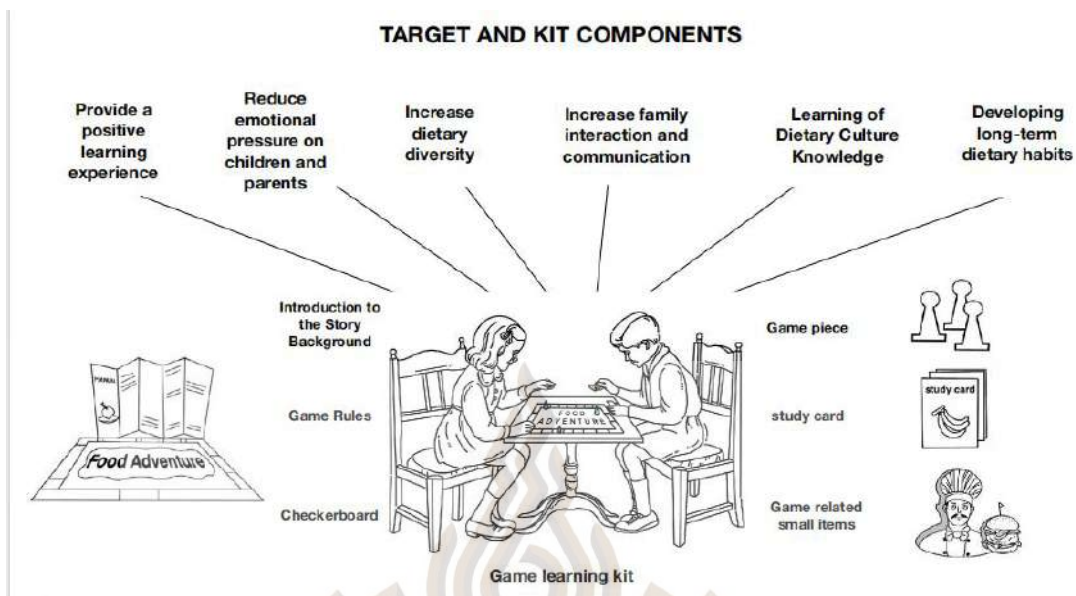


Figure 3.3 Sketch of the game usage instructions
Source: Researcher

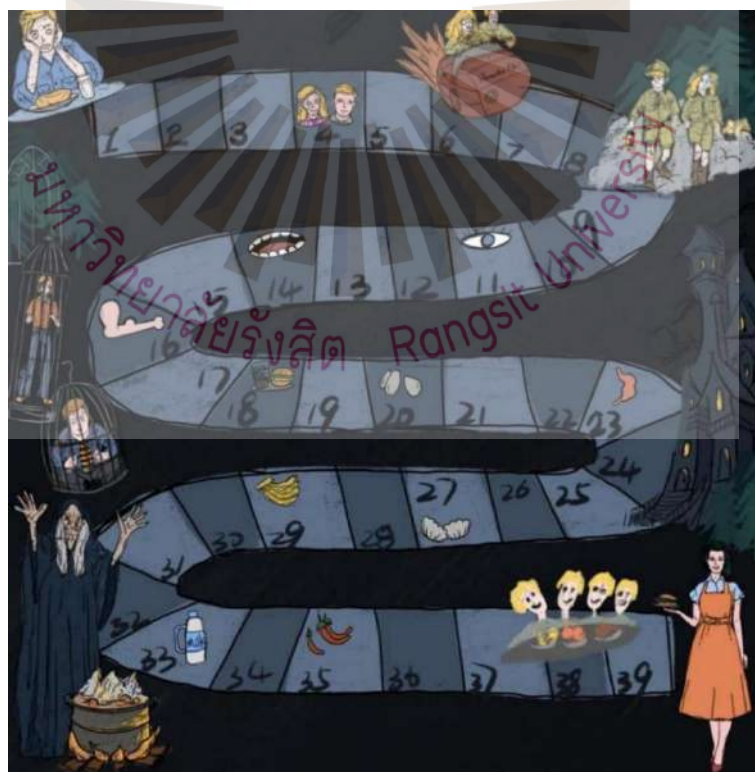


Figure 3.4 Game map design sketch
Source: Researcher



Figure 3.5 The game's main food design

Source: Researcher

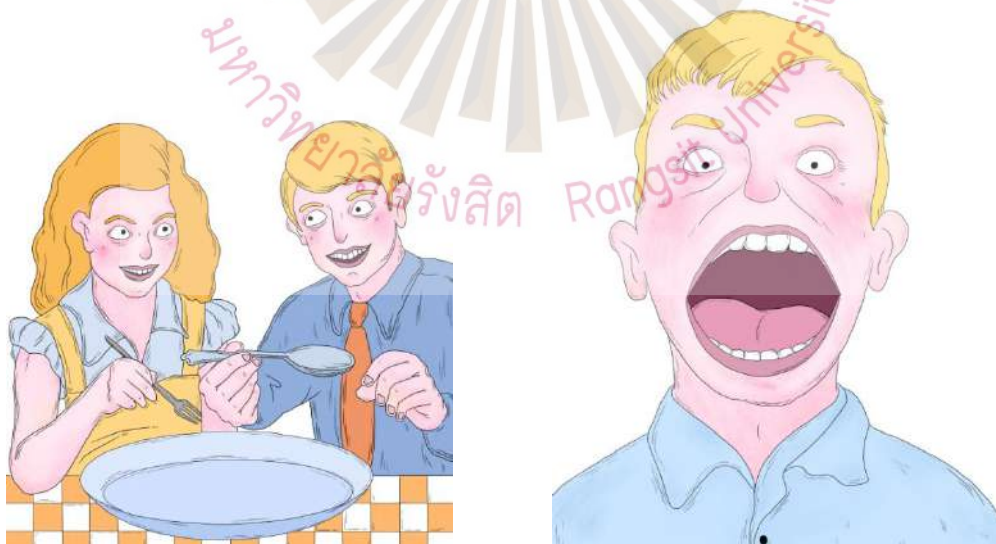


Figure 3.6 Main character design of the game

Source: Researcher

Chapter 4

Research Results

4.1 Design Results

After deeply exploring the causes, influences and solution strategies of children's bad eating habits, Researcher decided to use a unique and innovative way to spread this key message. By integrating story creation and game design, Researcher hope to guide the children to develop the habit of healthy eating with a lively attitude. To achieve this goal, Researcher chose the IPD Procreat drawing software as the design tool. Known for its rich features and ease of use, the software has become an indispensable tool for designers. In this project, Researcher made full use of the drawing function of Procreat to build a story world full of fun and adventure for the children.

In the story, Researcher skillfully integrate the relevant knowledge of healthy eating, so that the children can enjoy the story while also learning practical eating concepts. In addition, Researcher have designed a series of challenging games to help children further understand the importance of healthy eating during the game. These games are full of challenges, but also stimulate their creativity and imagination, so that they can gain knowledge and happiness in the games.

In the design process, Researcher always uphold the principle of "child-centered".

Researcher believe that only by truly understanding our children's needs and interests can we provide them with the most valuable educational experience.

Therefore, Researcher fully considered the children's age, cognitive ability and interests in the design process, and strive to let each child find their own fun in the story and games.

After a period of hard work, Researcher finally completed the design results of this project. This is a set of healthy diet education materials integrating stories, games and education, namely, aiming to help children establish the correct eating concept and form good eating habits. Researcher look forward to this design results to plant healthy seeds in the hearts of more children and add a bright color to their growth path.

In short, through the in-depth study of children's bad eating habits and the use of IPD's Procreat drawing software, I have created a set of innovative healthy diet education design results. In the form of stories and games, they vividly convey the importance of healthy eating, aiming to help children develop good eating habits. I firmly believe that with the love and recognition of the children, the design results will have a positive impact on their healthy growth.



Figure 4.1 Game instruction manual

4.1.1 About The Story Background

Children have a general love of animated movies and comics, so Researcher plan to set the story in a similar style to the Marvel movie Batman to inspire them and explore. The game will set up a series of levels, the children need to follow the requirements of the game one by one, to win the final victory. Therefore, the game should be highly interactive and interesting. The following is an overview of the story setting and the basic plot.

In the 21st century, there is a city called Yingtan, which is controlled by a witch named Nomashi. The witch strengthens herself by absorbing various prejudices of children about food.

The protagonist of the story. Jack, is a little boy who likes to be picky about food. Long term picky eating has led to various physical problems that affect his healthy growth. For this reason, his mother Nancy often worries about his health.

Jack grew up with three young friends, namely Big John, a fat man who likes meat, Little Henry, a thin man who doesn't like vegetables, and Emily, a brave and picky little girl.

One day, when Big John ate a dinner full of meat and Little Henry threw away the vegetable soup his mother had prepared for him, their prejudice towards food reached its peak.

At this moment, the sky suddenly became thunder and lightning. And they were captured by the witch Nomashi who came riding in the dark clouds. And the witch's next goal is Jack. At night, the witch broke into Jack's dream and filled him with everything he wanted to eat. When Jack couldn't control himself and was about to swallow food with his mouth wide open.

Emily woke him up. Emily anxiously told him that Big John and Little Henry had been captured by the witch and needed them to rescue together. otherwise the city would be occupied by the witch.

When Jack couldn't control himself and was about to swallow food with his mouth wide open, Emily woke him up. Emily anxiously told him that Big John and

Little Henry had been captured by the witch and needed them to rescue together. otherwise the city would be occupied by the witch. The witch lived in a deserted palace, surrounded by tall thorns.

Jack and Emily need to challenge different levels and challenge their prejudices towards food. and ultimately gather different food medals to summon a Sword of Light, defeat witches, rescue their companions, and restore the city to light. Only then can the children stop being picky eaters and thrive. So, they spread out the map and rode in a tomato cart, embarking on an adventure full of fantasy.

Due to the A dark light, she couldn't see her face clearly, just a huge black outline. Around the palace, there are more than ten children and adults bound, including their friends, who cannot see or hear. The indoor screen flickered and flickered.



Figure 4.2 Game story introduction

4.1.2 About Game Instructions

4.1.2.1 Game Background

In a magical world, various people live with delicious food. But recently, an evil and biased witch came to this city, specifically taking away children who have a bias towards food and making people more picky about food. As a taste adventurer, the player's task is to dispel prejudice, unlock the magic of wizards, and help people rediscover their taste buds and fall in love with food.

4.1.2.2 Game Components

- (1) Game board: Presents a map of the adventure world, including various locations such as castles, swamps, forests, etc.
- (2) Game Character: Players can choose a different character. (1-5 people)
- (3) Game Cards: Includes questions, tasks, and ingredient knowledge cards.
- (4) Game Medal: A medal representing the search for delicious and delicious treasures.
- (5) Monster of Prejudice Card: A question full of bias.

4.1.2.3 Game Rules

- (1) Players choose a great food adventurer and place it at the beginning of the gameboard.
- (2) Players take turns rolling dice and move according to the points on the dice. They can choose to move forward or backward, but they cannot skip the location.
- (3) When players land at a location, they draw a game card, which may be a question, task, or ingredient knowledge card.

(4) If it is a question card, other players can ask questions or supervise answers. If the answer is correct, the player will receive one medal after another; If the answer is wrong, they lose a medal.

(5) If it is a task card, players must complete the task, such as simulating the production of a nutritious sandwich or fruit salad. After completing the task, they were awarded two medals.

(6) If it is a food knowledge card, players can learn some knowledge about ingredients, which can help them in the game. For example, a card may say, "Strawberries are a fruit rich in vitamin C and antioxidants."

(7) If it is a biased card, players need to provide examples to explain why they are biased towards food.

4.1.2.4 Game Victory Conditions

The goal of the player is to obtain a certain number of game medals in the shortest possible time, pick up the sword, and defeat the witch to achieve victory.

4.1.2.5 Additional Reminder

The problems and tasks in the game should be adjusted based on the player's age and ability level to ensure that the game is educational. Witch bias card cards can cause players to lose some taste buds or medals, or they may need to skip a round to simulate the difficulty of picky eating. You can set up a "food mentor" in the game, and when players collect a certain number of medals, they can consult with the food mentor about healthy food, thereby gaining additional advantages. The goal of this board game is to educate children about healthy eating and various ingredients through interactive and entertaining ways, while providing an interesting way to

explore different types of food and stimulate interest in food, to help solve picky eating problems.



Figure 4.3 The game instructions



Figure 4.4 Game map description

So in this level breaking game, they will encounter many questions about food during the process, which will help them better understand the benefits of food to their

bodies. Therefore, they change their biases, try more food, and eventually become non picky children

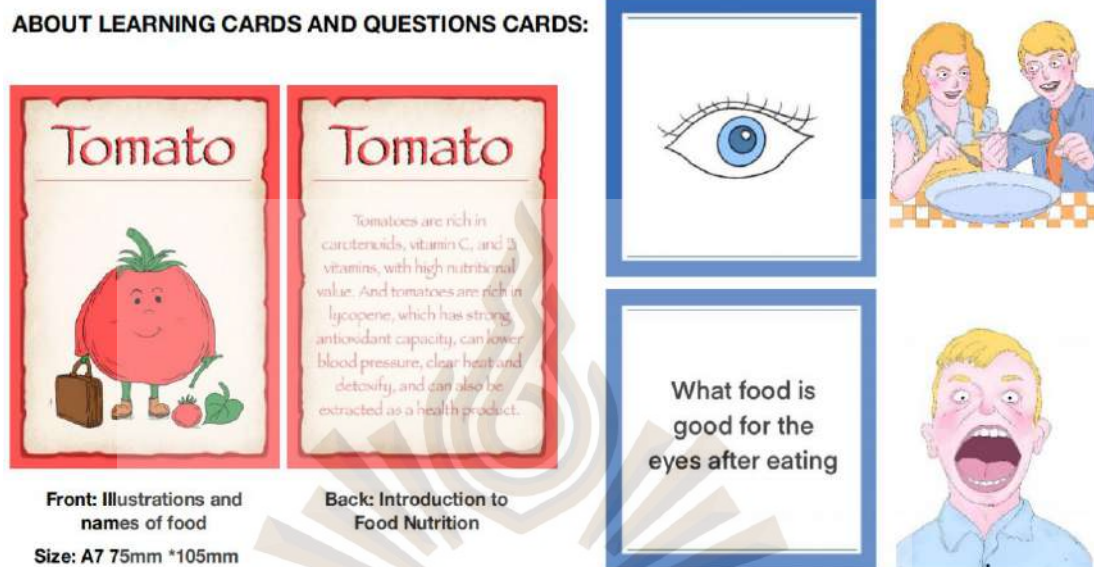


Figure 4.5 Game card instructions



Figure 4.6 Game card instructions

ABOUT THE COVER:



Figure 4.7 Game outer packaging design



Figure 4.8 Game outer packaging cover



Figure 4.9 Overall visual presentation of the game toolkit

So I Hope to the Educational (Game) Kit That Establishes a Friendly Relationship Between Children and Diet. Story+Board Game. To Improve Children's Picky Eating Problems.

4.2 Design outcome



Figure 4.10 Design the finished product display 1

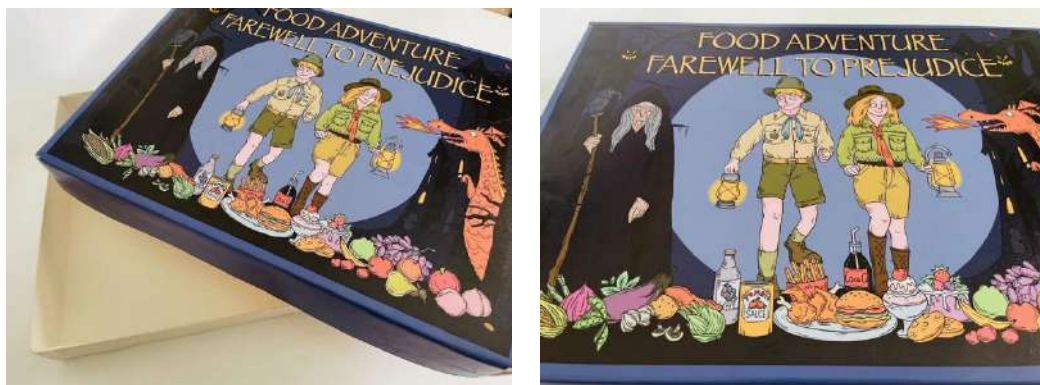


Figure 4.11 Design the finished product display 2



Figure 4.12 Design the finished product display 3



Figure 4.15 Design the finished product display 6



Figure 4.16 Design the finished product display 7



Figure 4.17 Design the finished product display 8

Chapter 5

Conclusion and Recommendations

5.1 Conclusion

Design a learning kit to enhance and build a good relationship between children and their diet (designed to achieve better long-term health outcomes). In the field of children's education, we are committed to exploring the most suitable way for children's education methods. To some extent, the traditional compulsory education can not meet the needs of children, they need a self-centered education from their own point of view. This way should stimulate their interest, let them learn in happiness, so as to truly realize edutainment.

Researcher know the importance of children's knowledge of food. They need to understand the nutritional value of food and how to match their diet to form healthy eating habits. However, traditional teaching methods have often bored children, who know very little about food. Therefore, Researcher designed a child-centered learning kit designed to stimulate their interest in food in innovative ways and allow them to learn food knowledge in a pleasant atmosphere.

The learning kit uses a clearance game design designed to stimulate children's interest in and understanding of food in the game. They need to overcome all kinds of difficulties and complete various tasks in the game, so as to understand the various knowledge of food. The design is designed to give children fun while also addressing

their rejection of some food. In this way, the children unconsciously improve their interest in food and develop good eating habits.

In the process of designing this learning kit, Researcher fully considered the children's psychological characteristics and interests. The design of the game is both interesting and challenging, so that the children can feel the fun of learning in the game. In addition, Researcher also focus on combining food knowledge with real life, so that children can understand the importance of food in their daily life. This practical design allows children to learn practical knowledge in the games, so as to be better applied in real life.

In short, this child-centered learning kit is designed to let children learn about food in a pleasant atmosphere, increase their interest in food, and develop good eating habits. In this way, we hope that our children can love food and enjoy a healthier and more delicious life. At the same time, we also hope that this toolkit can inject new vitality into China's education cause, so that more children can grow up happily.

5.2 Recommendations

How should we deal with and help children build healthy eating habits for their bad eating habits? Here are some detailed suggestions and strategies.

5.2.1 Raise education and educational awareness

5.2.1.1 Family

Parents can regularly learn healthy eating knowledge with their children, so that their children can understand the impact of different foods on their health, and cultivate their good eating habits. As some scholars have pointed out :

“Currently, limited conclusions may be drawn regarding the best method to involve parents in changing child diet to prevent obesity and improve health. Indirect methods remain the most commonly used strategies to engage parents, however, direct methods of engagement show more promise and therefore, warrant further research.

5.2.1.2 Schools

Schools can carry out nutrition education courses, so that students can master the basic nutrition knowledge and develop good eating habits.

5.2.1.3 Community

The community can organize healthy diet publicity activities to raise children's awareness and attention to healthy diet.

5.2.2 Demonstration and encouragement

5.2.2.1 Parents and guardians

Parents should set an example by choosing a healthy diet and encourage their children to try various foods during eating.

5.2.2.2 Educators

Teachers can encourage students to choose healthy food in the school canteen and set an example for them.



Figure 5.1 Children are on a healthy diet

Source: Bi kong yun yu you, 2023

5.2.3 Improve the food environment

5.2.3.1 Schools

School canteens should provide more healthy food choices and reduce the supply of foods high in calories, high in fat and high in sugar.

5.2.3.2 Day care centers

Day care centers should also pay attention to children's healthy diet and provide balanced food.

5.2.4 policies and regulations

5.2.4.1 Government

Formulate relevant policies and regulations, restrict children's food advertising, and improve school catering standards.

5.2.4.2 Food packaging

Nutrition information is required to be marked on the food packaging, so that parents and children can make a wise choice.

5.2.5 Cultivate children's ability of self-management

5.2.5.1 Education department and family

Through group discussion, role playing and other ways, let children understand the importance of reasonable diet, and cultivate their ability of independent thinking and decision-making.

5.2.5.2 Practical activities

Organize children to participate in planting, cooking and other activities, so that they can personally experience the whole process of food from planting to cooking, so as to cherish food more.

5.2.6 Increase outdoor activities and physical exercise

5.2.6.1 Schools and communities

Encourage schools and communities to organize more outdoor activities to allow children to exercise in the natural environment.

5.2.6.2 Family

Parents can accompany their children to do outdoor sports, which can not only enhance the parent-child relationship, but also help their children consume excess energy.

5.2.7 Mental health support

5.2.7.1 Professional institutions

Psychological counselors can cooperate with children, parents and teachers to solve dietary problems and pay attention to children's mental health.

5.2.7.2 Family

Parents should pay attention to their children's emotions, create a harmonious family atmosphere, and help their children build confidence.

5.2.8 Diversified ways of education

5.2.8.1 Animations, picture books, games, etc.: Guide children to develop good eating habits through vivid and interesting stories and characters.

5.2.8.2 Education courses: Use diversified education methods, such as cartoons, picture books, games, etc., to let children understand a healthy diet in a relaxed and happy atmosphere.

5.2.9 Family support and participation

5.2.9.1 Family

Parents should actively participate in their children's food education, make food plans together, and let their children participate in the food selection, preparation and cooking process.

5.2.9.2 Family and school cooperation

Family and school can pay attention to children's diet problems together, and jointly promote the healthy growth of children.

5.2.10 Continuous attention and evaluation

5.2.10.1 Regular physical examination

conduct regular physical examination for children to understand their physical condition, find out problems in time and give guidance.

5.2.10.2 Questionnaire survey

through the questionnaire survey to understand the child's diet.



References

- American Academy of Pediatrics. (2017). Pediatric Nutrition. In: *Guidelines for Health Supervision of Infants, Children, and Adolescents* (4th ed.). Ik Grove Village, IL: Author.
- Birch, L. L., & Fisher, J. O. (1998). Development of eating behaviors among children and adolescents. *Pediatrics*, 101(3 Pt 2), 539-549.
- Bird, J., & Edwards, S. (2015). Children Learning to Use Technologies through Play: A Digital Play Framework. *British Journal of Educational Technology*, 46(6), 1149-1160.
- Centers for Disease Control and Prevention (CDC). (2020). *Childhood Nutrition Facts*. Retrieved from <https://www.cdc.gov/healthyschools/nutrition/facts.htm>
- Daniels, S. R. (2009). The consequences of childhood overweight and obesity. *The Future of Children*, 19(2), 47-67.
- Fox, M. K., Devaney, B., Reidy, K., Razafindrakoto, C., & Ziegler, P. (2006) Relationship between Portion Size and Energy Intake among Infants and Toddlers: Evidence of Self-Regulation. *Journal of the American Dietetic Association*, 106(1), 77-83.
- Hingle, M. D., & O'Connor, T. M. (2013). Parental involvement in interventions to improve child dietary intake: a systematic review. *Preventive Medicine*, 56(3-4), 1-15.
- Lin, Z. (2004). *Eating Behavior and Its Influencing Factors and Effects on Health in Urban Children* (Unpublished Master's thesis). Fujian Medical University, China.
- Neumark-Sztainer, D., Wall, M., Perry, C., & Story, M. (2003). Correlates of fruit and vegetable intake among adolescents: Findings from Project EAT. *Preventive Medicine*, 37(3), 198-208.

References (continued)

- Nicklaus, S., Remy, E., & Issanchou, S. (2012). Family correlates of children's vegetable consumption at dinner. *Appetite*, 58(2), 569-576.
- Picciano, M. F., Smiciklas-Wright, H., Birch, L. L., Mitchell, D. C., Murray-Kolb, L., & McConahy, K. L. (2000). Nutritional guidance is needed during dietary transition in early childhood. *Pediatrics*, 106(1 Pt1), 109-114.
<https://doi.org/10.1542/peds.106.1.109>
- Schwartz, C., Scholtens, P. A., Lalanne, A., Weenen, H., & Nicklaus, S. (2011). Development of healthy eating habits early in life. Review of recent evidence and selected guidelines. *Appetite*, 57(3), 796-807.
<https://doi.org/10.1016/j.appet.2011.05.316>
- Story, M., Neumark-Sztainer, D., & French, S. (2002). Individual and environmental influences on adolescent eating behaviors. *Journal of the American Dietetic Association*, 102(3 Suppl), S40-S51.
- Wei, J. (2021). Study on the harm of poor eating habits on physical development and psychological development in preschool children. *Modern diagnosis and treatment*, 32(13), 2128-2129.
- World Health Organization (WHO). (2020). *Guideline: Sugars intake for adults and children*. Retrieved from <https://www.who.int/publications/i/item/9789241549028>.

Appendix

The relationship between children and diet in the contemporary society-a questionnaire survey



Dear parents, in order to better understand the relationship between children and food in the contemporary society, we launched a food survey for children. Thank you for taking a few minutes to participate in this answer. Now let's start now!

1. What is the gender of your child?

☐ Boy

☐ Girl

2. How old is your child?

☐ 1-3

☐ 4-5

☐ 6-8

☐ 9-12

3. Your child's weight ?

☐ Very light weight

☐ Standard

☐ Over weight

☐ Obesity

4. Can your child focus on eating at the meal point?

☐ yes

☐ Needs adult intervention and guidance

5. When does your child usually eat?

☐ 10-20mins

☐ 20-30mins

☐ 45mins



☐ One hour or more

6. Does your child have a preference for food?

☐ Basically no partial eclipse

☐ Generally, eat more food

☐ Severe picky eater

7. Does your child like to eat snacks?

☐ No

☐ Occasionally

☐ Often eat

☐ Excessive preference for snacks

8. When does your child eat snacks?

☐ Volunteer

☐ Ask for

☐ Home alone

9. Your child's diet with meat and vegetables

☐ More meat and less vegetables

☐ More vegetables and less meat

☐ Vegetable and meat balance

☐ All meat or all vegetables

10. Your child's favorite food besides the staple food is ?

☐ Fried food

☐ Vegetables and fruit

◎Bakery

◎Candy and drink

11. If your child has food that they do not eat, what is it? Why don't children like to eat this type of food (why?)

12. Does your child do anything unrelated to food during the eating process? (Speaking, watching TV, playing with toys, etc.)

13. What is your usual attitude when children are distracted by their diet?

14. What measures would you take to achieve the desired eating effect?

◎Supervision at the table

◎Improve cooking

◎Take an appetizer

◎Increase the amount of exercise

◎Cut down on sweets

◎Force eating

◎Hungry meal

15. Do parents or kindergartens carry out special food culture guidance education for children?

◎Few

◎Often

16. What are your thoughts and experiences on the relationship between diet and children? Or thorny issues

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