THE JOYS OF COOKING: A SYSTEM THAT ENCOURAGE PREPARING FOOD

BY

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Abstract

International students living abroad miss the tastes of home food while they are trying to familiarise themselves with the new flavours and feelings of the country where they are studying. They desire to cook in their dorms and apartments, but they are limited by space and time to acquire a proper cooking workstation. This led the author to explore the challenges and problems of international students studying abroad. On the other hand, the objective of the study is to help and encourage young people to keep cooking and find the joy in cooking in a limited space, while also improving the efficiency and convenience of cooking by having to choose the necessary modular kitchen systems. The data to support this approach were collected via face-to-face group discussions as well as surveys conducted on social media. From the results, it concluded that 80% of international students would like to choose and customize the necessary kitchen parts independently and prefer it to fit in small spaces, thereby helping and encouraging people to cook. This article explores a modular kitchen system that can grow in the future. To meet the purpose of user self-selection, the users choose the parts they need, design, and assemble a unique cooking island according to the room layout, as fun as playing the Lego system. It is easy to convert and also maximize the use of limited space. When the users move to a larger area and want to perfect their kitchens, they will not need to discard the original modules, but only need to assemble new modules according to their needs. The modular system allows the users to combine and place functional areas according to their habits to achieve efficient cooking.

(Total 42 pages)

Keywords: Joy of Cooking, Modular Kitchen, Kitchen Storage, Portability, Compact Cooking System.

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Table of Contents

Table of Contents (continued)

List of Tables

Page

Table

List of Figures

List of Figures (continued)

Page

Figure

Chapter 1

Introduction

1.1 Background and Significance of the Problem

The purpose of cooking has not been limited to filling the stomach and keeping good health. The taste of food will remind us of the memory of a specified period. Either warm or sad, it is the medium of our emotions, the guard of health. That shows why cooking is so important. Today, fast food has become a food culture, so people do not have to prepare materials and spend times in the kitchen. The food culture and system have changed dramatically in recent decades. Issues that have received widespread attention, especially concerning dietary health, the effects of eating habits on health, and food-related illnesses. Contemporary young people are already in a sub-healthy state. Along with these problems, more cooking shows and other forms of entertainment programs with cooking themes have become more and more exciting, as a result, schools even offer cooking classes, which makes cooking even more critical.

But the fact is that modern people work every day, the pace of life quickly and they often do not have enough time to cook. Moreover, it is too expensive to buy a full set of equipment, especially for young people who are either busy studying or working, living in small apartments also no high income, have no ability, and no need to buy a complete kitchen. Still, they also need to eat and keep healthy. Based on this, I launched this research. I is an overseas student has a rented apartment and misses the tastes of his hometown. So he decided to cook by himself, but because of not enough money and no need to buy a complete set of cooking equipment, there was only one induction cooker. Preparing food takes more time than usual, everyday chores and activities, as well as studying, takes an amount of time. There was no enough time to cook at all. According to the survey, many people had the same problems as me. The

kitchen is a place frequently used at home and plays a significant role in our domestic lives. However, it is also a place that many people love and hate, especially some office workers. I hopes to prepare creamy and delicious food for the family, but often I would not say will enjoy the boring and tiredness of kitchen work. Two over three of a person's day will be spent at home. Housework takes about 10% of the time, but the energy consumed by housework is the largest. If one can design an efficient and rational kitchen system, one can get rid of tedious and tired kitchen work, make kitchen cooking efficient, convenient, and fun, that even encourage people who are not good at cooking enjoy it.

1.2 Research Objectives

1.2.1 To help and encourage young people to keep cooking and find the joy of cooking in a limited space.

1.2.2 To study how to maximize usage of space while also improving the efficiency and convenience of cooking with a tight budget.

1.2.3 To design modular kitchen systems and explore the possibilities of developing.

Chapter 2

Literature Review

Compact kitchens are a furnished culinary set made for apartments, tiny homes, and houses where space is limited. These kitchenettes are designed as an all-in-one bundle that can consist of a sink, refrigerator, stovetop, an oven, and storage space.

The joy comes from control and satisfaction. To let young users find the joy of cooking, I needs to understand their needs, associations, and problems in the cooking process, then solve the issues, and encourage young users to insist on cooking.

This chapter focuses on understanding the design of compact kitchens, combining with user needs, and learning how to use design ideas to solve practical problems.

2.1 User needs research

According to analysis in《Kitchen Supplies Design of Single Hotel Apartment》（Li, 2008）a lazy philosophy has quietly emerged among young people in modern society their primary purpose is to fully enjoy the fun of life while studying and working hard. This rather deprecatory term gives a new definition: lazy but smart, a new lifestyle has been created. These ‘lazy-smart’ people need to be nutritious and straightforward and for them, saving time and effort is the most important thing. They prefer to use simple and durable products are minimalist, prefer high quality, small and compact multi-functional or modular products; therefore, IKEA, MUJI and other brands have a pivotal position in the hearts of young people. Based on the appeal, the author conducted a study on Edgar R. Bernier's compact kitchen (Figure 2.1).

Although the compact kitchen solves the problem of small space cooking appliances to a certain extent, it is more inclined to portability and camping.

2.2 efficiency cook research

How to be a speedier, more efficient cook, and how to make 30 minutes recipes finish on time. It was cooking courses have taught us how to cook efficiently, set up the work area correctly, and prepare the necessary tools before cooking, such as cookpot, bowl, cutting board, knife, shovel, trash can, etc. I, food starts from a cutting board and a kitchen knife. Place the ingredients to be cut in advance on the left side in order and place the container for the cut ingredients. On the right side, the parts are processed in order from hard vegetables to soft vegetables to meat. This can avoid wasting time by repeatedly cleaning the cutting board, the cooking process, oil, salt, shallots, garlic, etc. Please put it in an easy-to-find location, avoiding wasted time by avoiding repeated searches. Of course, to avoid back and look at the recipe determination step by step, it is essential to be confident and remember the recipe. We will find that before cooking, the chefs will prepare the required materials in advance, diced the vegetables, and calculated the seasonings in the container, even if some ingredients are used in the end. There is also systematicity, ensuring sufficient space and cleanliness of the work area, all tools and materials are in the place where they should appear, to avoid always wasting a small pile of things and wasting time. Cleaning on time is also essential, and cleaning on the go also means that cleaning is more natural, when the batter is wet, the battered bowl will be clean faster. It is easier to reuse measuring spoons if one rinse them quickly after each use. Usually, there is time to clean, wait for the pan to heat up or during the cooking progress. Put a bowl of soapy water into the sink and immerse the measuring cup and spoon in it. Because one tends to reuse these ingredients in oner recipes, it is easy to remove oily or dry ingredients. (The kitchn Editors, 2019) This can indeed improve cooking efficiency, but only if there is a set of relatively complete kitchen space, which costs a lot and is helpful, but it does not solve the problem in this article.

Regarding memorizing recipes, it is also difficult for people with bad memories. In Fika: 30 Classic Swedish Baking Recipes from Bite-size Cookies to Festive Cakes published by IKEA (2012), each of its recipes is presented in the form of pictures. The color, texture, and texture of different ingredients can be distinguished at a glance, and it is more intuitive and accurate. The user does not have to go to the book to confirm each time. Standing a few meters away still knows how much the dish needs. This kind of presentation method is more efficient.

Figure 2.1 Fika of IKEA

Source: IKEA, 2012

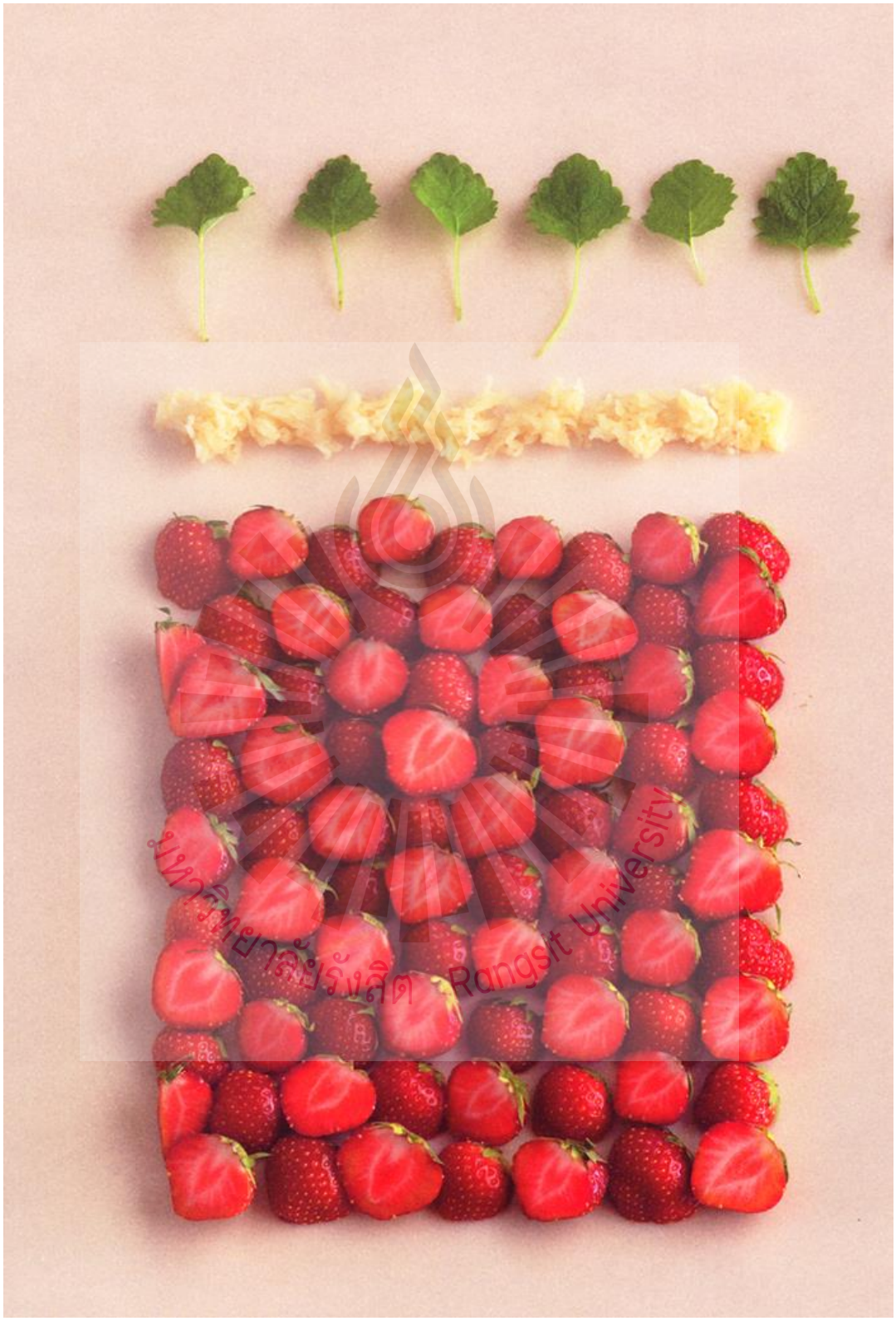

Figure 2.2 Content of Fika of IKEA

Source: IKEA, 2012

2.3 Case Study

2.3.1 Compact kitchen

The compact kitchen is an object of this invention to provide a compact field kitchen that can be quickly packed and unpacked; It is another object of this invention to provide a compact field kitchen that can be disassembled into a portable carrying case. It is a further object of this invention to provide a compact field kitchen that offers a stove, a sink, a work area, and storage space all in one unit, which may be folded together to provide a portable carrying case. Briefly, a compact field kitchen is equipped comprising a carrying case having a lower section containing a gas stove and sink and an upper part having a storage area for utensils and food with a windbreaker attached to that and a worktable attached to the windbreaker. Retractable legs are connected to the bottom of the lower section. The kitchen is disassembled by folding the worktable into the windbreaker, the windbreaker into the upper carrying case section, closing the two parts upon each other, and retracting the legs, thereby forming a readily portable compact carrying case not must larger than a commercial suitcase. The compact field kitchen provides a camper with all the major items required in group camping in one space-saving, easily transportable, readily assembled unit.

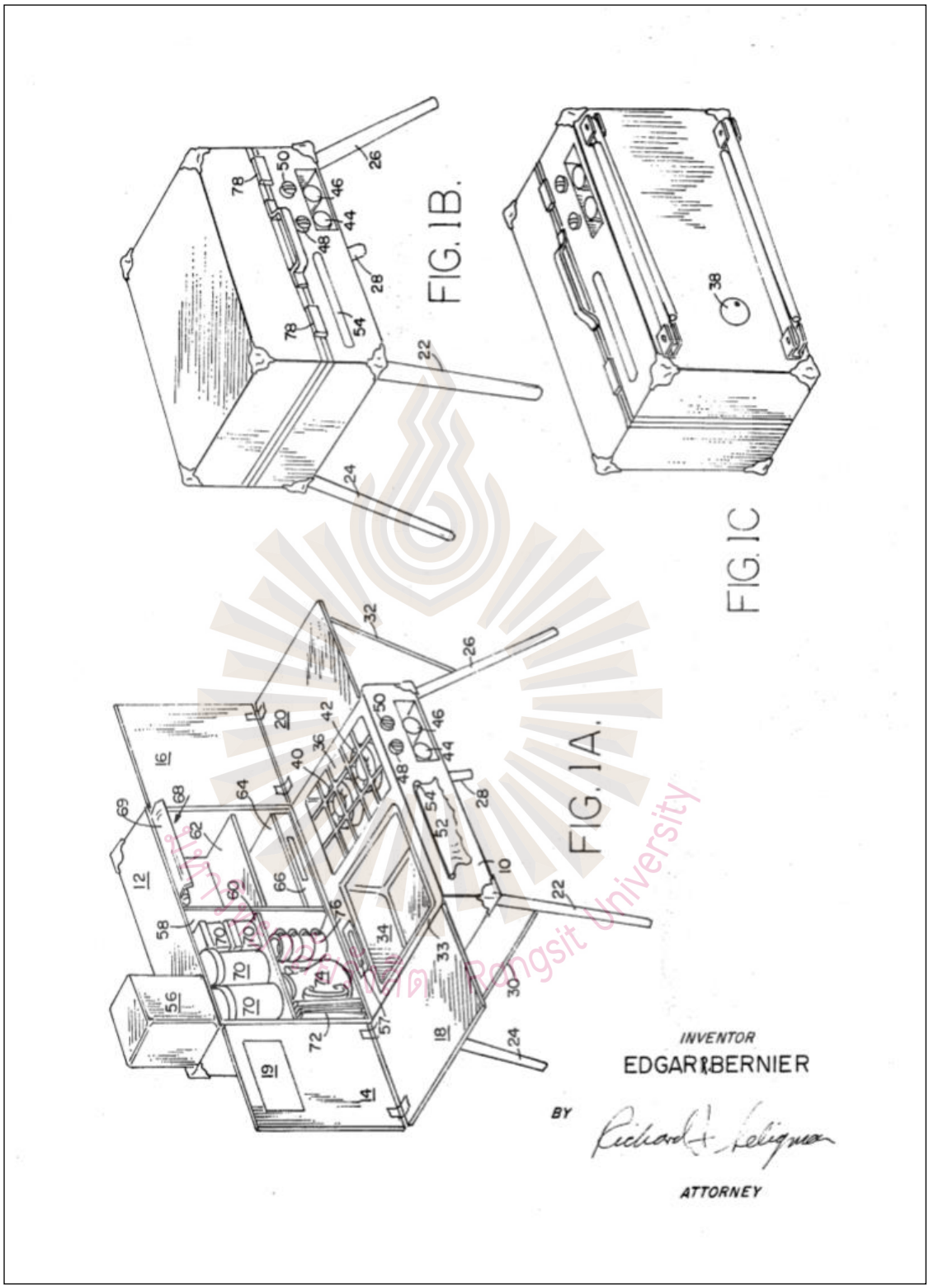

Figure 2.3 Compact field kitchen of Edgar R. Bernier

Source: Bernier, 1975

2.3.2 Portable Cooking Table

This portable cooking table designed by Marc Sadler is the latest in a series designed for the Italian brand Fabbrica Pelletterie Milano (FMP). This compact kitchen made its debut during this year's Milan Design Week. The product is equipped with a recycled aluminum shell that can provide travelers with a full-featured cooking solution. This modular suitcase kitchen has a reliable storage capacity, covering mini-refrigerators, knife storage, stovetops, cutting boards, and cleaning area storage. This design allows travelers to obtain perfect ultra-high Efficiency anywhere, and to satisfy the craving of cooking food at any time.

Figure 2.4 Compact kitchen of Marc Sadler

Source: Marc Sadler, 2018

2.3.3 IKEA Design Analysis

IKEA Design absorbs the unique traditional and modern culture of Nordic design, pays attention to function and form aesthetics. He upheld the principles of practicality and humanized functional design and carries the versatility of products with simple shapes. The shape and function of IKEA products are closely connected, and they are based on functional product design. Abandon the tedious and redundant decoration, highlight the characteristics of modernity, introduction, and atmosphere. Clean and straightforward geometry and naturally flowing curves and lines are the most common. For example, the BILLY bookcase has a stylish and simple shape, which is composed of several squares of different sizes. The colors are freely matched, and the form is most simplified without reducing the function.

Figure 2.5 BILLY bookcase of IKEA

Source: Kristoffersson, 2014

The structure designed by IKEA is also simple and clear, easy to split, and combine. The simple structure allows users to understand the product structure quickly, assemble it by themselves, cut and splice, maximize the convenience of product use while enriching the diversity of products. Therefore, when the product is damaged or scrapped and cannot be used, the intact components can still be used, saving resources and avoiding waste of materials.

In addition to black and white gray, which symbolize the simple style, the color matching of IKEA products often uses beautiful high-purity colors. When using IKEA colors, not only the product itself but also the overall environment, space performance, human body, and Physiological feelings, adding the original color of the material, make the product reveal the natural and harmonious nature in modern times.

2.3.4 MUJI Design Analysis

Japanese design has a small but high-quality temperament. They focus on product details. They can always find simple design methods and design languages in complex, to make some seemingly significant but straightforward changes. Japan is a country where culture and religious commerce are merged. Under the influence of Shintoism, the worship of nature has almost become a faith. Therefore, they are more slender, sharp, and close to nature. The Japanese manifest these factors as "loyal to "The natural nature of the material version" has a profound influence on the formation of beautiful culture and lifestyle in traditional craft crystals or modern design. This kind of subjective view is the most respectful of nature in the design works, loyal to the quality of the material, and the attitude of pursuing the essence has formed a unique design philosophy in Japan. Although in Japan, as in China, it influences the traditional and peaceful traditional aesthetic concepts of "with" and "without" philosophical thinking and the idea of "Shensuo." However, due to the particularity of its own culture, "Minimalism" is also currently received by Jane's brand Muji, which is a feature of Japanese people's skin, natural, and contract product design. In addition to the design of Western minimalism, Muji has modern and simple design masters

such as original research, Naoto Fukasawa, and Liu Zongli. It also has the characteristics of simplicity, rationality, and precise functions that represent Japan.

Muji was formally established by Masao Monet in the autumn of 1990 and introduced the first batch of unbranded but excellent products to the market. The external packaging design of its products is generous and straightforward, significantly reducing the cost of its goods. It is also excellent value for money; Muji is different from high-end fashion brands. It advocates nature. It often uses straightforward and straightforward design materials and colors and forms with divine expressions to convey its unique inner spirit and design concept. Under Japan's exclusive economic environment at that time, the Japanese market needed some useful but affordable daily necessities to adapt to the harsh energy crisis. At that time, there was no brand of this nature, so Muji came into being and mainly sold to the market. Some products without a brand but not of low quality refer to high-quality products without labels and decorations. This word accurately expresses the brand image of Muji. How to achieve good quality and distinguish it from other brands, without Muji found a simple solution from traditional culture and aesthetics. By simplifying and optimizing the entire design process, a set of minimalist design methods was obtained.

In addition to design concepts and culture, materials, colors, shapes, and functions, it also embodies the application of simplicity in design. Muji involves minimalism in poster design and product packaging design. Muji chooses natural and natural materials. Muji's packaging has almost no decorations and colors; it wastes expensive and rare materials and chooses materials with natural beauty, environmental protection, and rustic. In the use of product colors, Muji presents a unified and pure feeling, using a single color, the gray color with low color saturation makes people feel comfortable and relaxed, presents a savory taste, and the preference for translucent materials reflects the ethereal The artistic conception is concise, pure and unified. Muji uses white and colorless very frequently. From a philosophical point of view, white and colorless symbolize both existence and non-existence, just like Hara said, no is also existence. White is a kind of association that can inspire people about tolerance, modernization, high-level sense, taste, and renewal. At the same time, white

also blends these characteristics in harmony, as if it is a symbol of simplicity by nature as if nothing exists. It seems that everything exists. The simplicity of Muji's shape is mainly reflected in the unified structure and form of its design works. MUJI's products give people a simple and refreshing feeling, but they reflect the intention in the details, naturally and not deliberately.

Naoto Fukasawa's design umbrella is roughly the same as a general umbrella. However, there is a hidden mystery in the handle of the umbrella handle. A small slot is designed here. It is this detail that solves the problem that has troubled us for a long time. Where should I put the umbrella after entering the door on a rainy day? In life, we rarely see a particular area dedicated to umbrellas, and it is unrealistic to require that such a space be set up for various occasions. Still, Naoto Fukasawa is not limited to traditional thinking. Looking for a solution in the environment, but from the design of the product itself to find a solution, ingenious, and unique. Besides, this small groove also has a function, that is, you can hang the shopping bag on it to reduce weight. This most natural and straightforward expression seems to be inadvertently, precisely because he thoroughly considered the interaction between people and products and the environment.

Another example is his tray table lamp. After a day of work, people return home with keys to open the door as usual. Turn on the light after entering the door. After turning on the light, the key will be naturally placed next to the desk lamp, or at any place. Initially, this action was an unconscious behavior habit of people, but it would bury trouble for finding a key to the house. Designers want to put an end to this kind of concern so that the habitual behavior in people's lives can occur smoothly so that the design can meet people's needs better. Problems like this may often exist in our lives. All designers have to do is to discover the issues and needs in life. Therefore, to achieve the simplicity of structure and form, it is necessary to start from people's needs, from the relationship between people, design, and the environment. The concept and considerations in the early stage have matured, and the simple form will come naturally, not for simplicity but simple.

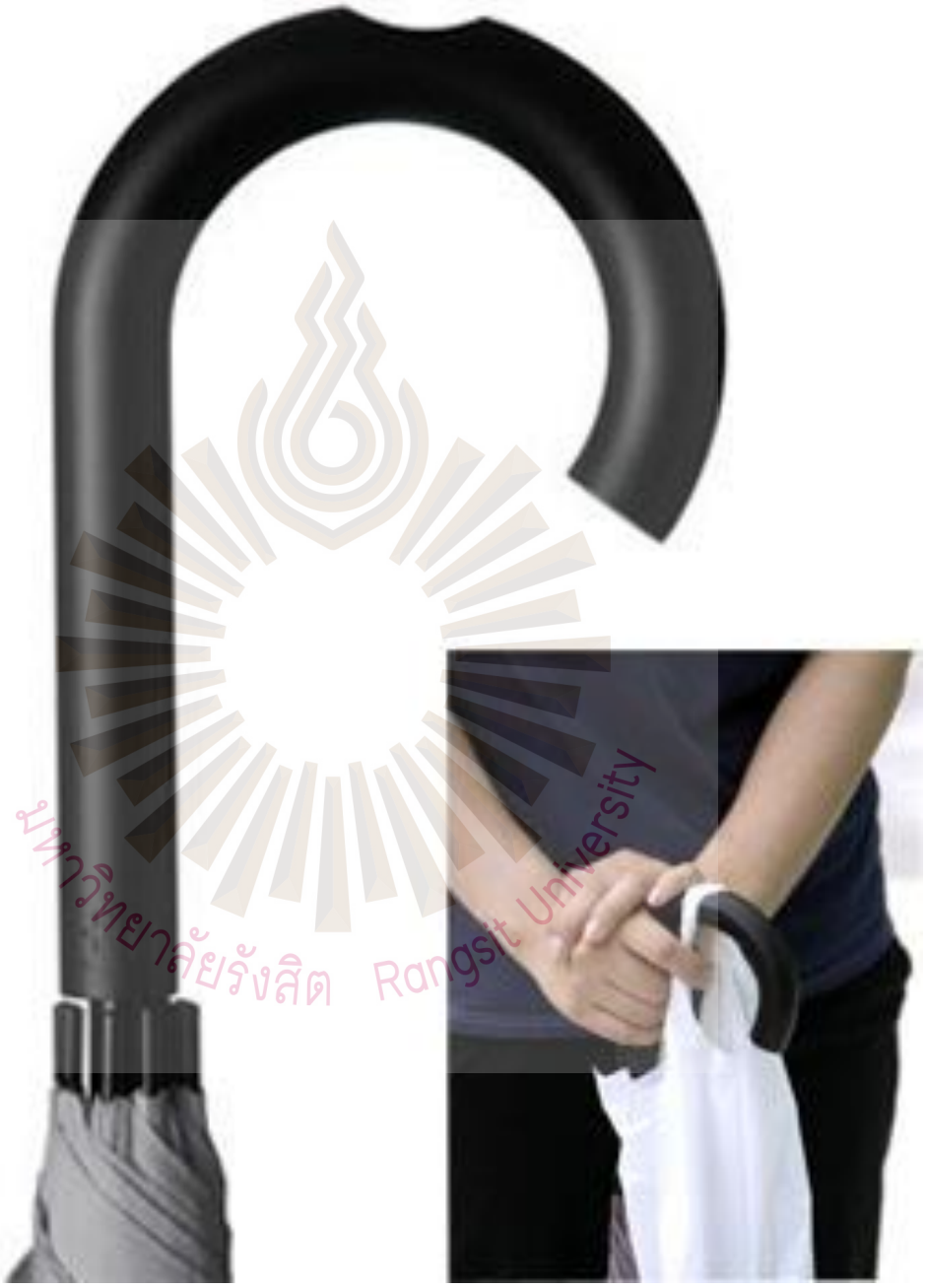

Figure 2.6 Umbrella of Naoto Fukasawa

Source: Fukasawa, 2014

Figure 2.7 Table lamp of Naoto Fukasawa

Source: Fukasawa, 2014

Chapter 3

Research Methodology

This study consists of two main stages and applied to universal modular kitchen design. The first stage involves the study of young kitchen user needs and discover how their needs are correlated with each other by reading. In the second stage, Through Conduct face-to-face learning exchanges with 10 international students, 2 from China, 1 from Myanmar, and 7 from Thailand, to clarify the problems and concerns encountered by young kitchen users. Use social media to collect views and opinions of their central part of the kitchen from 20 users. Later, a factor analysis of the survey responses is done to construct universal kitchen factors.

3.1 Investigate and data analysis

From the method, I found that cooking can be divided into three parts: preparation, cooking and cleaning. This article will start from these three parts to find solutions. Table 3.1 shows these 3parts time cost of several commonly different cooking methods, including fry, boil, braise and bake. From forum group data, the proportion of time used can be seen that no matter which way, the cooking itself does not take much time, and the similar tedious and repetitive processes such as preparation and cleaning work take up most of the time. This dramatically reduces to improve the efficiency of cooking, the solutions proposed in this article will try to start from these two aspects to save time and improve efficiency, so that kitchen cooking becomes efficient, and encourage people to enjoy cooking more. From Table 3.1, I also found that because of too many tools and clutter, finding the right tools and condiments also took up some time. To try to save this part of the time, I surveyed the necessary spices in Table 3.2. I used a questionnaire survey method to record the condiment selection data used by 20 people in their daily cooking. From this, the necessary condiment data was determined. It shows that people will choose and buy

many condiments, but only a few of them are using. Too much seasoning will not only exacerbate the problem of small space but also waste cooking time.

Table 3.1 Time cost of different cooking methods analysis.

Cooking methods	Prepare time	Cooking time	Finding seasoning time	Cleaning time	Total time cost
Fry	15 min	10 min	5 min	10 min	40 min
Boil	15 min	30 min	3 min	12 min	60 min
Braise	10 min	30 min	0 min	10 min	50 min
Bake	90 min	25 min	15 min	20 min	150 min

Table 3.2 Necessary ingredients chosen by 20 international students.

Ingredients	People counting
Salt	20
Oil	20
Pepper	10
MSG	13
Vinegar	5
Sauce	16
Hometown seasoning	20

Regarding the statistics of the time used for cleaning from forum group data, I used a sample survey method to investigate the proportion of time spent cleaning different items in 20 people's cooking and used a table to present the final average proportion chart (Table 3.3). It found that the large, relatively flat parts of the ground, table, and wall are generally easier to clean and take less time, but for some small things, it is more difficult to clean also spend more time and more patience.

Table 3.3 Cleaning time segments.

Clean target	Time cost(min)
Floor	12
Table	3
Wall	6
Dishes	15
Jar	24

I found through investigation that many users will have their unique cooking habits. Still, most of the kitchen systems on the market are combined functionally according to the natural way, which makes users have to spend more time to adapt when cooking. A few people are unable to accept the original spatial positioning. In response to these circumstances, I surveyed users on the inherent function of the kitchen system and obtained the data in Table 3.4.

Table 3.4 Original arrangement acceptability.

Acceptability	People counting
Rational	6
Common	12
Unreasonable	2

Through the above data, conclude young users prefer to use a simple, minimalist, durable, and multifunction product. Further analysis leads to an initial solution that encourages young people to keep cooking and overcome problems, namely the compact kitchen mentioned in the article, it is terrific Solves the problem

of maximizing the use of space, and even achieves portability and versatility, and can be taken out for camping. Still, the compact kitchen is not much different from the traditional cuisine in functional partitions, even if there are some changes, it is still not easy to disassemble Assembly, cannot meet the personalized use needs of users. Based on this, I began to try to solve the problem with design ideas, combined with the learning and understanding of IKEA, Muji's simple product design functions, structure, shape, and color, tried to combine minimalist ideas and proposed a preliminary design idea, weekly cooking plan and storage system.

3.2 Design progress

This research-based on the analysis of cooking and the use of space, to solve problems from a design perspective, start with preparation steps, cleaning time, and maximize the usage of space, efficient of the store and retrieve the object, to create practical and exciting solutions for storage systems.

3.2.1 Weekly cooking plan and Storage system

Weekly cooking plan, prepare early, Segregate food base on freshness as anything stays fresh for a max one week. Balanced the nourishment, organize ingredients for consumption for balanced nutrition. Prepare ingredients every time one cook. Not only does it take time to cut vegetables, but cleaning and organizing tools also take time, so preparing multiple servings in advance at once can effectively save time and Improve Efficiency. At the same time, research shows that when people plan and do something purposefully, they will be more rational, think more carefully, and more easily maintain nutritional balance and gain health. But this solution does not involve too much about the field of design, and it is not the best solution.

The Storage system, referring to the space station’s limited use of limited space, try to incorporate kitchen appliances into a box-shaped space. The top of the box is made of transparent material to make it easier to see the situation inside, and it is also equipped with slides. The seasoning jar is fixed on the slideway on the top of

the box and placed on the top edge of the box. When cooking, pull the jar over the slideway and push it back after use to prevent it from being stained by oil. The sides of the box can be used for hanging Rice tools and pots, liquid seasonings such as soy sauce and oil are stored in the front of the box, equipped with a long pump head with a pressure pump, cooking is pulled in and put in the amount, it can be easily cleaned with paper towels after use Push back to the original place to save the most space and the area that needs to be cleaned, to achieve efficient and convenient cooking.

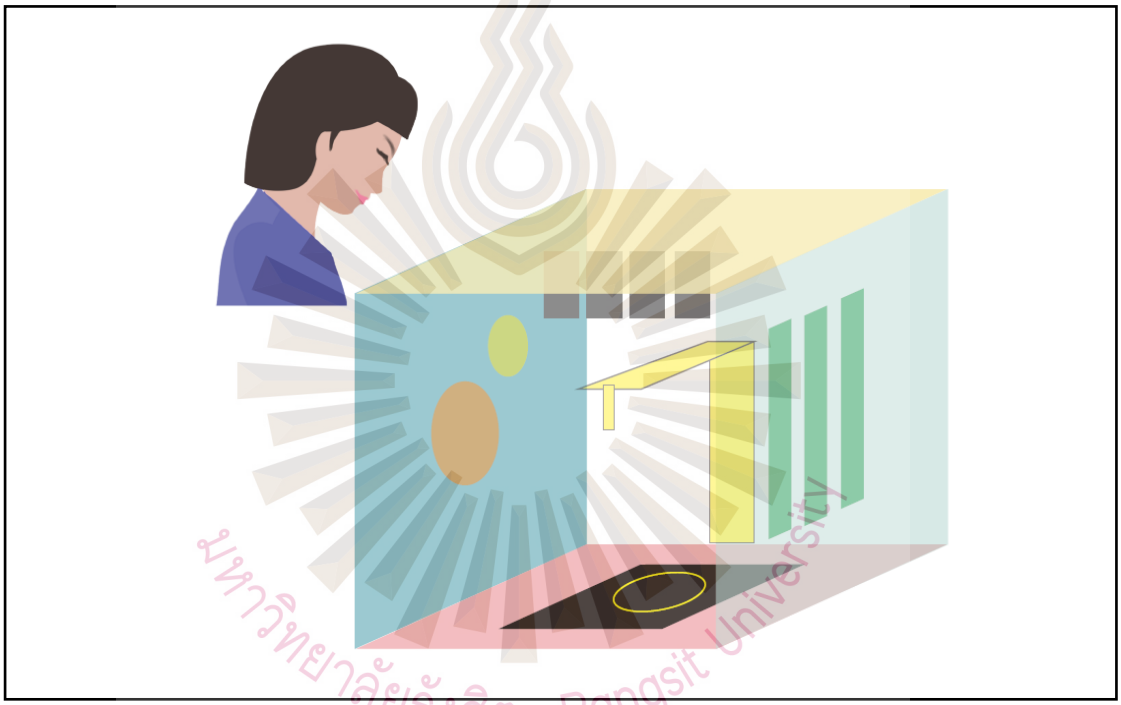

Figure 3.1 Storage system sketch

Although the above two assumptions have solved some problems to a certain extent, after user surveys, it found that the method of use is not precise, and it takes some time to prepare. It does not solve the problem of unreasonable placement of the functional area, so I adopted further the survey, inspired by the Lego system and traditional modular kitchens, which proposes a modular kitchen system design with more possibility.

3.2.2 Modular kitchen system

Based on functional analysis, the modular units with the same or similar functions in the kitchen are separated and then used to standardize the principle of design. To carry out operations such as unification, induction, and simplification, the interface with a unified standard is designed for existing in the form of independent modules through different combinations of unit modules to form various functional areas to meet different needs of users. Modular design can ensure the versatility of the product while providing diversified configurations to meet the individual needs of users. Incorporating modular design into the home design of the kitchen not only saves indoor space but also makes the cooking process more efficient, convenient, and personalized. I attempts to decompose the kitchen system into simple geometric shapes with uniform specifications and show more possibilities through different splicing methods.

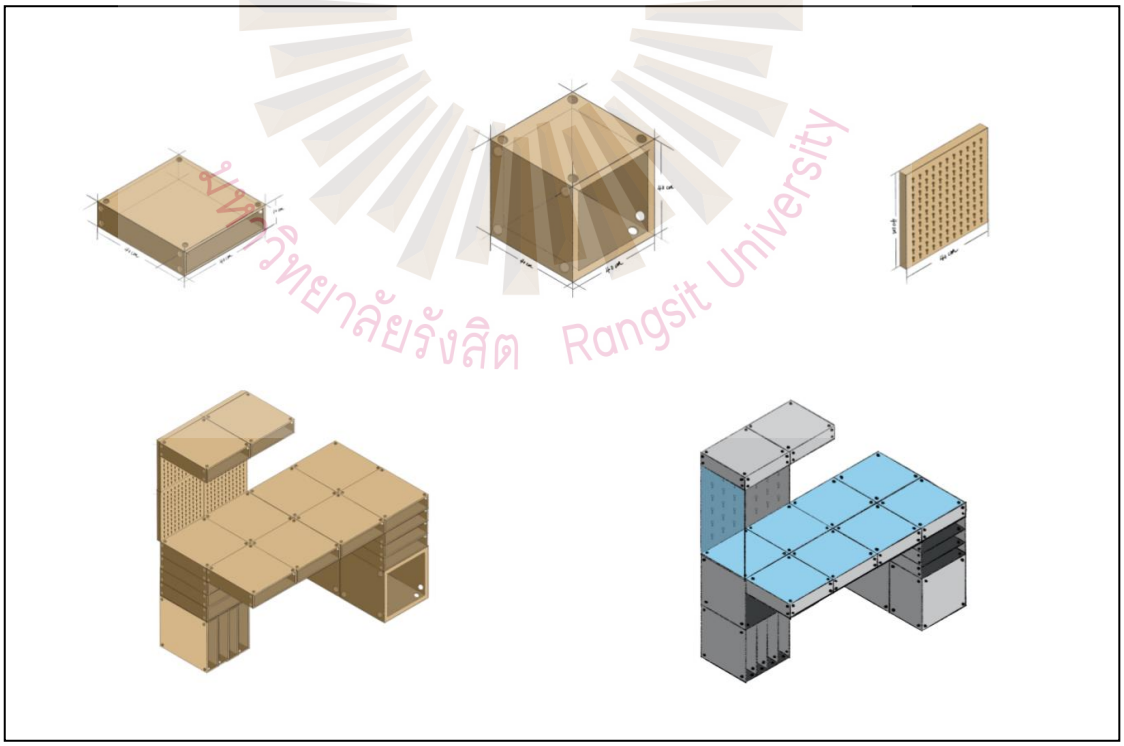

Figure 3.2 Modular storage system sketch

3.2.3 One Sheet Plywood Table

At the same time, I also proposed another more cost-effective modular solution, one sheet plywood table, using only a piece of plywood to achieve all the functions of the kitchen as much as possible. Try different cutting methods to separate the modules, design a better shape to meet people's living habits, and minimize the waste of materials. This process is fascinating. The model is used to determine the physical conditions, simplify the lines, and finally use Auto software drafting paper. Users don't need to go to the mall to buy the products that have been formed. They only need to download electronic drawings on the web page. In any studio or even their own home, they can use a piece of plywood to achieve their cooking purposes. They can also use two according to user needs. One or more are stitched together to solve the problem of the size of the operation space and realize more possibilities.

However, there are many shortcomings in this solution, because there is no application of other materials, which can only be connected by a tenon and mortise. This is also one of the design features, but it also causes many holes and gaps, which may not be used as support and storage parts. It is a big problem, but water, oil or other food residues will be trapped in the gaps in the cooking function area, which will accelerate the decline of the service life of the product. There are also hidden safety and health risks that still need to be improved.

Figure 3.3 Module.1 drawing and form

Figure 3.4 Module.1 views of different angle

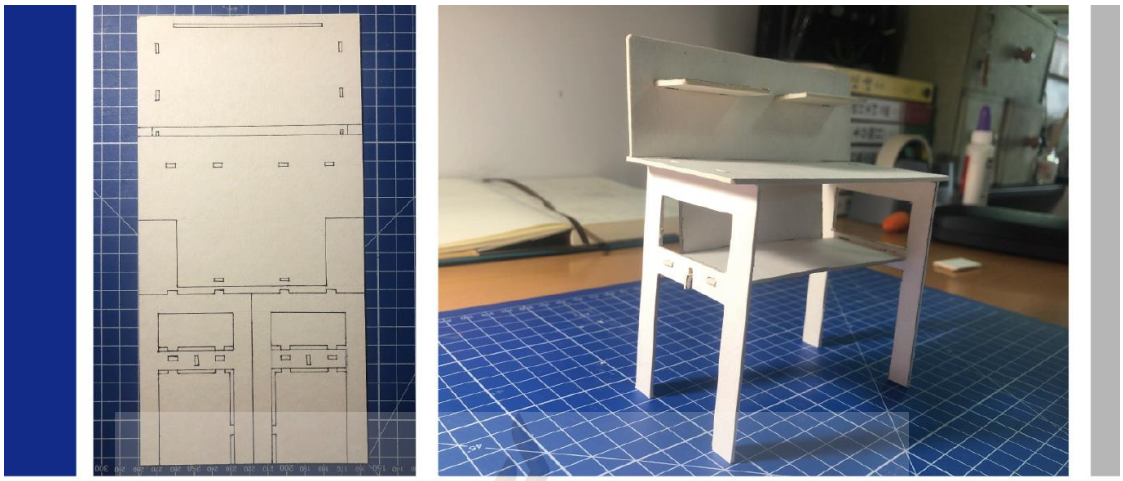

Figure 3.5 Module.2 drawing and form

Figure 3.6 Module.2 views of different angle

3.2.4 Combining Functions

To further maximize the use of space, the integration and expansion of the chopping area are carried out. As shown in Figure 3.7, the chopping board is designed as a box with edges chamfered. After expansion, it will unlock more functional areas. The chopping board is used for processing meat and vegetable ingredients, chop board2 is used to cut fruits, and can also be used as a tray for ingredients. After cutting the dishes, you can pull them out and put the ingredients into the pot. There is also an electronic scale on the left, which is used to weigh the amount of food and spices. The cover can also be used as a knife holder. Crash the entire preparation area into a box.

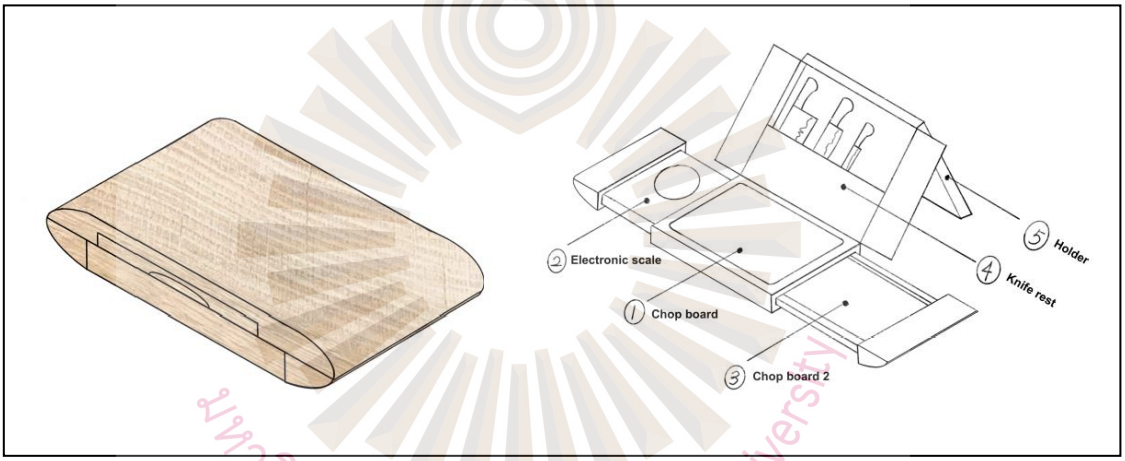

Figure 3.7 Chopping board box 1

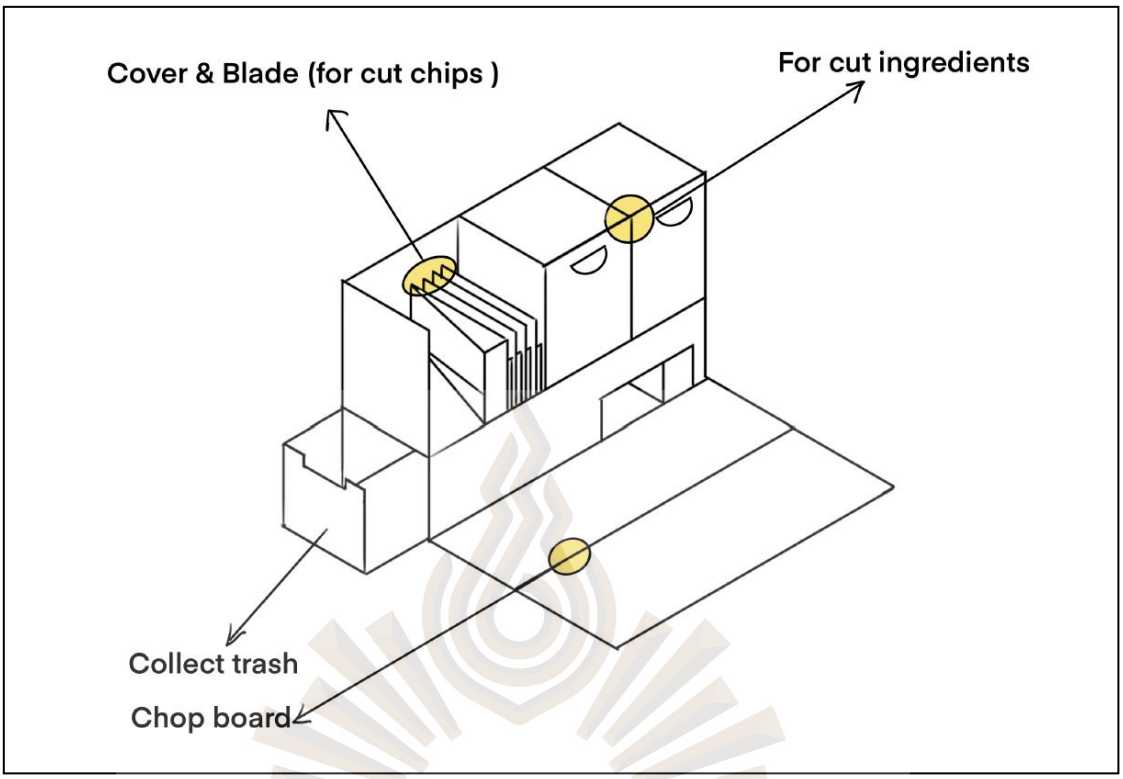

Figure 3.8 Chopping board box 2

Figure 3.8 is another way to integrate the cutting board functional area, adding a small box specifically for holding ingredients and a box for trash.

3.2.5 Kitchen system segmentation

I divided the cooking process into three parts: preparation, cooking, and cleaning, and designed the following modular functional units for each section.

Figure 3.9 Washing unit

The basic module can be assembled according to needs and other modules and can be used for storage inside

Figure 3.10 Chopping unit and trash can

Replaceable chopping board at the top and a hole for easy garbage disposal, two interlocking ring plates are used to secure garbage bags. There is a retractable card slot under the lid, which is used to put the box of cut ingredients.

Figure 3.11 Cooking unit

In addition to internal drawers, increase the use of longitudinal space, can add more functional modules

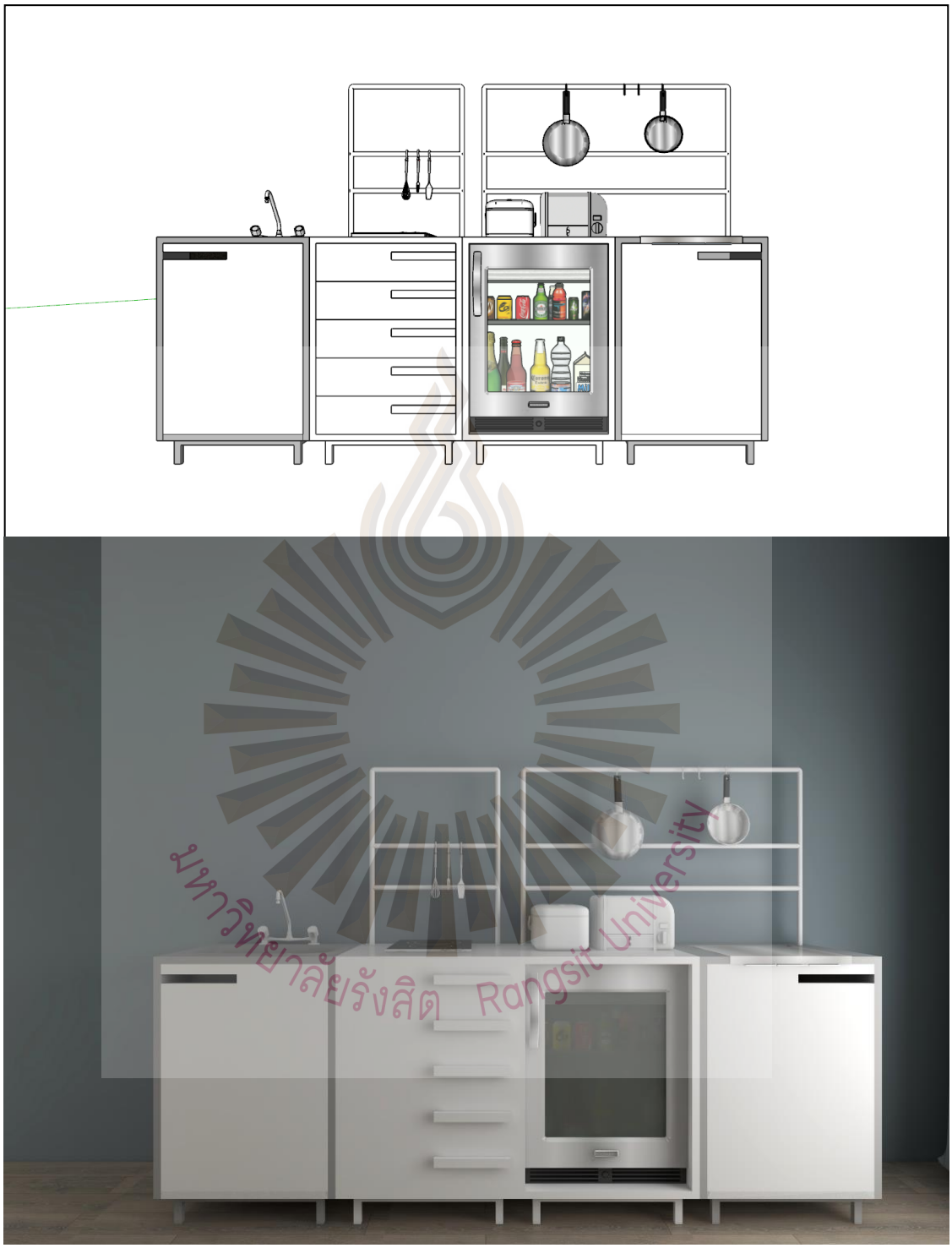

Figure 3.12 Example of assemble

The above functional unit modules are adjusted and optimized in detail to obtain a new shape and achieve more functional combinations. However, the volume of a single unit is still relatively large, and it is not easy to split and reorganize. The connection method is the tenon and mortise method combined with the previous One Sheet Plywood Table, and the rubber ring can improve the problem of food residue retention. However, it is still not easy to split.

Figure 3.13 Improve form of unit

Chapter 4

Modular Kitchen system

The final design, modular litchen system, meets the purpose of user self-selection. Choose the module they need to design and assemble a unique kitchen according to the room layout. They do not need to discard any module when they change the environment, add on the new module to realize their perfect kitchen.so the system can have more possibilities of growth.

4.1 Design Components

There are the details of the system basic modules, and you can see the little cube on each module's top and the spare sideline on the bottom.

Figure 4.1 Cover part

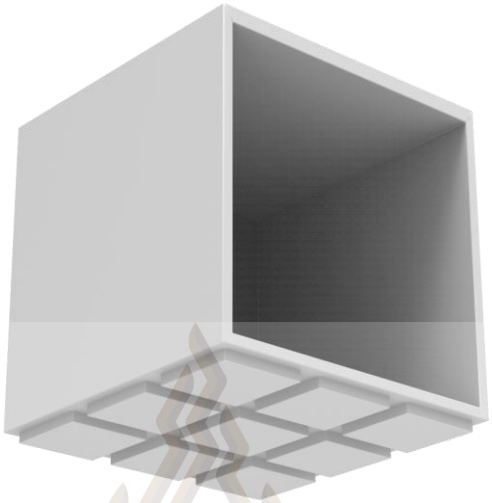

Figure 4.2 Cabinet part

Figure 4.3 Stools part

4.2 Joining system

By those structures, the system will quickly be fixed with each other, like the Lego system. For assemble free, I proposed a more different specification module

Figure 4.4 Exploded view of joining system

To improve the kitchen function, add other expansion function modules based on the basic module. There is a way to show how the basic module and add-on parts work together.

Figure 4.5 Exploded view of an add-on module joining system

4.3 Detail of growth system

The modular system does not need to have many modules, even only one set. It can also work well with a normal single working table and expand the function to cook. This module height is 15 cm, add on the working table height it will become 90-95 cm, to be a perfect height for cooking.

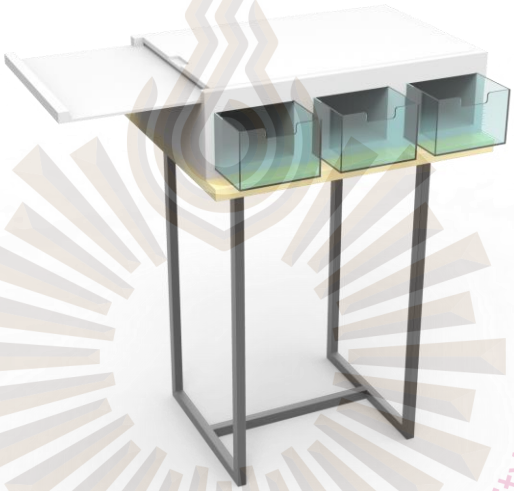

Figure 4.6 One module with a working table

By add on more modules, the user will have a relatively complete kitchen. The chopping area I design a expand work board that can slide out on the left side, the blue plastic box is for cut ingredients, those boxes I don’t set drawer side because this part we can take out, after put ingredients to cookpot, wash it and put back. Also, these boxes and the cut board can change after overuse. Behind the chopping board is a trash can, the baffle plate with hinge is used to stop the cut ingredients so we can throw quickly. The right side I design a metal box can pull out. It is for seasoning jar with the magnet. After use, the user pulls back to keep clean. It allows users to combine place functional areas according to their habits to achieve efficient mixing.

Figure 4.7 Relatively complete kitchen

Figure 4.8 Scale of a relatively complete kitchen

Keep adding modules; the kitchen will continue growing as the user's need. These systems can be used with many saturations

Figure 4.9 Example of growth.

4.4 Material and Improvement

For the choice of cover material, Corian is a synthetic excellent durable material. It is widely used in kitchens and bathrooms. It has excellent water resistance and easy to clean. It is a safe material which also repairability. The texture is uniform can seamlessly be connected, so it's a well cover material of my design. At the same time, it has 130 colors and textures to choose from, which can meet different style needs. Considering the needs of users and coping with different situations, stainless steel plates and nylon materials will also be used for the cover material to meet different personalized needs.

For the choice of cabinet material, plywood is a relatively low-cost material that has a higher resistance to moisture and more excellent stability. Also, it can easily be protected by cover other stuff, like plastic laminate or wood veneer.

The base and door decoration will use aluminum alloy material. It has the advantages of a proper combination of strength and plasticity, excellent corrosion resistance, smooth coloring. Users do not even need to go to the factory to change the color, and you can use the spray gun to reapply at home color perfectly blend in different styles.

For the future, I will not limit the functionality of the modules so that it will have more opportunities for growth, even can change the style and purpose to use for whole interior decoration.

Figure 4.10 Example of functionality growth 1.

Figure 4.11 Example of functionality growth 2.

Figure 4.12 Example of functionality growth 3.

Chapter 5

Conclusion and Recommendations

5.1 Conclusion

The objective of this project is to encourage young people to keep cooking in a limited space, be efficient, and enjoy it. This design divides the functional area of the kitchen system, designs independent functional units, and then adopts a unified modular assembly method for freedom Installation is different from the traditional modular kitchen. This design allows users to assemble freely according to their habits because the whole kitchen system is divided into small unit modules. When building the kitchen, it is no longer limited to the size of the space, according to the room layout According to the user's needs, and the kitchen function can be realized in the area of 2 square meters to maximize the use of space and even work in combination with existing furniture. The simple connection method allows the overused modules to be replaced individually, saving costs. The free choice of materials and colors also enables the modular kitchen system to be applied in different styles, with greater possibilities to meet the user's personalized needs, dull, exciting, and efficient cooking.

5.2 Recommendations

The simple design of the geometric shape module is to achieve more growth possibilities. In the future development, the details will be adjusted to improve the module's robustness, load-bearing, and stability, and add more material choices to achieve its application outside the kitchen space, even the whole interior decoration application.

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